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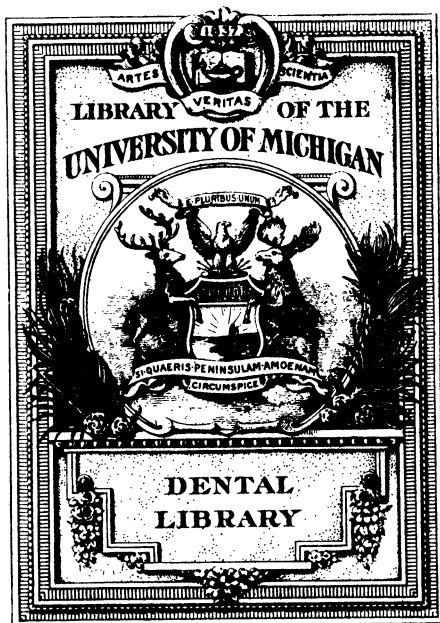
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AUGUST 4th

YEAR 1911

The AMERICAN DENTAL JOURNAL

Edited By
BERNARD J. CIGRAND, M. S., D. D. S.

DECLARATION:

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Arousing a deeper conception of our duty to the public;
Instilling a broader and more liberal professional spirit;
Aiding in elevating the plane of dental organizations;
Supporting state boards in executing dental laws;
Lending assistance to worthy and ethical practitioners;
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The AMERICAN DENTAL JOURNAL

DR. BERNARD J. CIGRAND, Editor

Published on the fourth of every month by The
Ross Dental Manufacturing Company.

Editorials and Comments

"The editor assumed charge of this journal with the signed understanding that he shall have absolute and unlimited control and supervision of the editorial and literary elements; this unusual grant makes it possible to render the profession an independent periodical; the title page clearly indicates the scope under the new policy of this old established journal."—*Publishers.*

IS OUR JUDGMENT OF FACIAL BEAUTY, GEOGRAPHICAL, RACIAL OR ACCIDENTAL?

The newspapers, the magazines, the books, the plays, the paintings and all other contrivances of civilization are constantly impressing us with the thought that beauty is some definite character.

In this editorial we take exception to this idea and treat facial and oral beauty in a manner quite different than has been the case in days of old, and we hope the editorial will stimulate others to classify what is called beauty by correspondence. The theme relates itself to prosthesis and orthodontia, and as a whole indicates the great importance which necessarily attaches itself to our labor—the divine task of restoring and reproducing the human mouth, as it may be in conformity with God's ordained rules.

The human face has been the theme for ages; it has lent inspiration to both brush and pen for countless generations; and it was an element in the very origin of our language. The Egyptian obelisks attest the early and primitive handiwork of the chisel in its attempt to portray and preserve the human face. The earnest labors

of the Phoenicians' ceramic artists eagerly sought to emboss it on the exquisite vase work, and the Grecian maids in painstaking manner hoped to preserve it in their tapestry, while the Romans patiently wove it into costly cloths. But whether found on Egyptian granite, or on Etruscan metal, it never truly stood as the mirror of the soul—when blazoned by ancient hands.

Much as archaeologists sing the praise of the talent of the ancient dead and much as recent discoveries proclaim the old story of lost arts, we of this day and age live in a gloriously more artistic era of the earth's career.

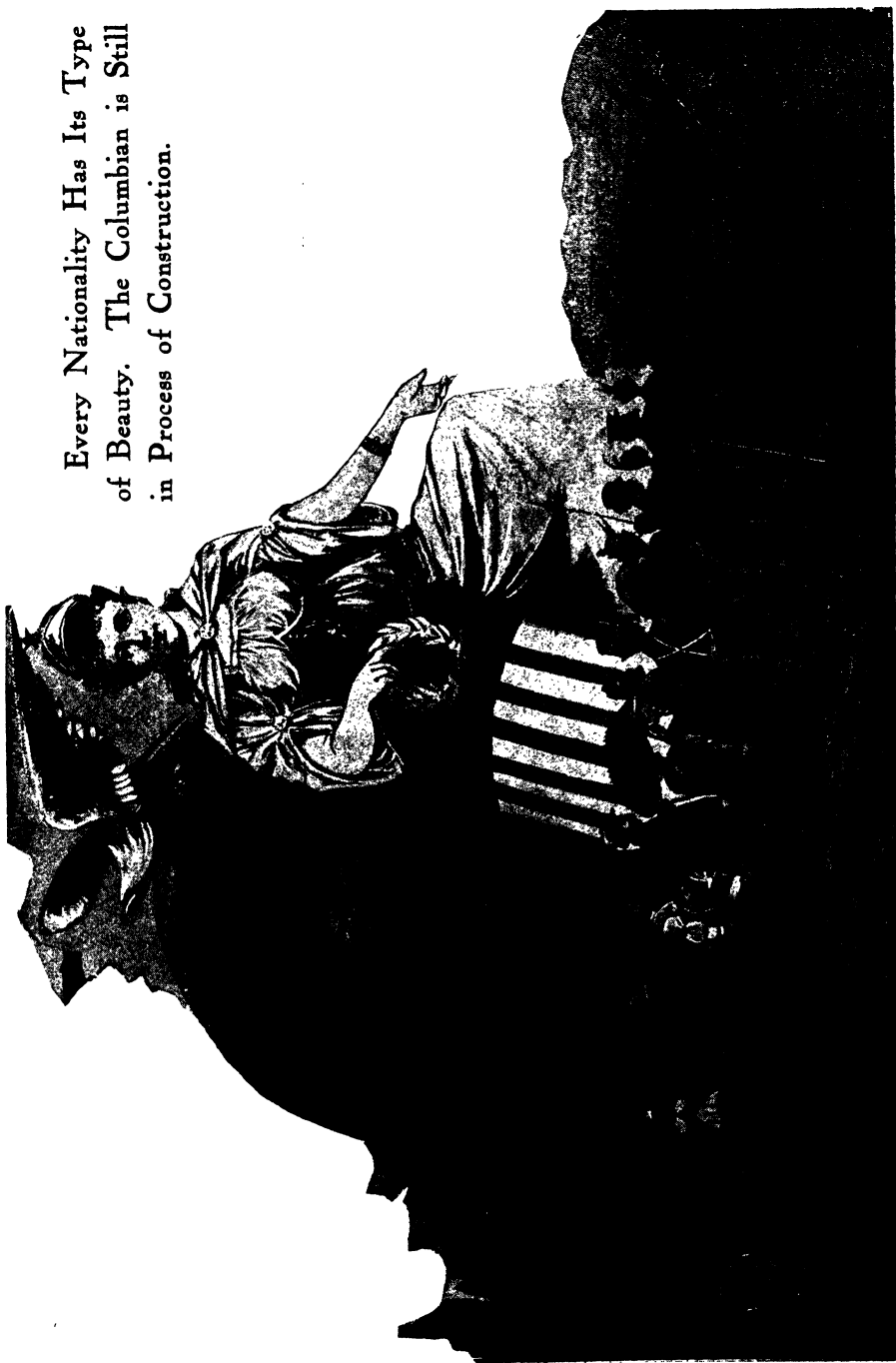
The artists of old did nobly considering their knowledge and opportunities, but their labors to reproduce the human face were abortive—the result was crude. How was it possible, with their meager ken of anatomy and physiology, and positive ignorance of their accompaniments to accurately carve or reproduce the certainties of muscle, fiber and filament. In my travels through the art galleries of Europe I carefully noted the great and striking difference between sculpture and art antedating psychological and anatomical knowledge, and I am lenient indeed when I say that the worship of ancient sculpture as it pertains to the human face does not appeal to me.

The argument is advanced that time has wrought the change; there may be truth in this, but time has not caused their lips to grow nor teeth to change positions; nor has Father Time in his destructive moods caused eyes to be pushed out of position—and yet in all Egyptian, Arabic and Phoenician diagrams in portraying a profile of the human face the eye is indicated direct front view.

The human face, in its true proportions, does not exist on cloth nor stone until the Alexandrian age. Subsequent to this epoch the Greeks and finally the Romans occupied their time in its more exact blazonry, while it has been the modern sculptors' triumph to catch the life and soul of the face and enshrine it in lifelike marble. But only within the last fifty years has there been any noticeable effort to delineate in any measure of accuracy the symbols of character, upon which we as modern scientists perform our services.

The remote past had the knowledge of form and outline, the mediaeval added life, but the modern brush and chisel contributed the soul.

Every Nationality Has Its Type
of Beauty. The Columbian is Still
in Process of Construction.



If there are any people who have not visited fine arts and liberal science buildings and observed there the dreamland of art they have an opportunity that must not be lost. The marvelous advance of the craft which cuts the stone is beyond brief analysis. The present age asks for realism and minutiae; and the artists and sculptors are not disappointing an expectant laity.

In this forward and progressive trend there is indeed a lesson for those of us who hope to preserve and restore the face, not for periods of years, nor epochs of time, simply during the time that life lasts. We must catch the inspiration of this magnificent display of art and return to our professional studios and follow in the footsteps of these masters of dexterity.

Some might ask what can kindred callings teach us? Of what avail is a knowledge of fine art and wherein can the artist or sculptor lead the way?

The study of fine art, sculpture and psychology are among the latest recommendations to the student curriculum, and practitioners will do well to observe the benefits which are derived from possessing a knowledge of these kindred vocations.

It is difficult to determine the exact facial outline which would comply with the various schools of art or be in harmony with the ideas of the famous sculptors. In fact the general outline of the face is different according to the nativity and training of the artist, and this is especially true regarding those living in different periods of civilization. The Egyptians idealized the retreating forehead, the Grecians admired the long, straight nose, the Romans thought the beak nose more beautiful; the Saxons gloried in a massive lower jaw, while the French paid tribute to the beauties of the lip. In fact all nations and people have rendered special consideration to some feature of the face and the elements of personal beauty were largely dependent on geographical location and even climatic influences.

What the world pronounced as a perfect or beautiful face two centuries ago would be declared primitive today, and yet the sculptors and artists have finally come to understand the basic equations of the divine law of correspondence.

The underlying law of harmony and correspondence has superseded all dogmatic rules as enunciated by the masters of a century

ago. The artists of today recognize the admirable disposition of the Grecian nose. The strong element of the massive jaw; the firm disposition of the Roman nose and the loveliness and goodness of eyes and lips, but they must be coupled and be in harmony with corresponding features, and in this dependence there exists the intricate and fascinating study of facial art.

That there is a distinct relationship between the mouth and the frontal region there can be little question. This was recognized years ago, but direct reference to it is found in Tuckerman's Washington's character as exemplified in his portraits. The lines read: "The usual objection of the Stuart Washington is a certain fullness about the mouth which does not correspond with the distinct lines of the frontal region."

Artists and scientists for upward of a century have recognized the opening of the ear as a point best calculated to estimate all developmental stages. In profile this is the essential point. The polarity of the ear was recognized, too, by such eminent scientists as Dr. Gall and Combe.

The early artists subdivided the face into three parts in such a manner that the first third embraced the forehead, the second third included eyes and nose, while the third contained the mouth and chin.

Artists and observers long since recognized that in the infant the ear seemed to change its location, but this was apparent and not real. The youth portrays this facial development. Nelson Sizer, in commenting on this, says: "It will be noticed that the infant head increases relatively more forward and upward than backward, being larger in the middle and back region proportionally than it is in the front and hence a mother is apt to think her babe has such a little, contracted, sloping head she is fearful of its mental inferiority. But as the child's mental activity comes into play the anterior and superior portions of the brain are gradually developed."

Prior to the days of Dr. Gall and Spurzheim, those who studied the human countenance and facial expressions seemed to have no idea that the brain had the slightest relation to intellectual manifestations. They were aware that if a heavy blow was given upon the head insensibility and even paralysis or death might result, but they did not regard the brain as the seat of mentality. They believed, as

many do even this day and age, that all emotions, passions, sentiments, and affections were attributes of the soul, while our varied tastes and energy sprang from the heart.

Scientists and artists today know that the face is the mirror of the brain and that its varied expressions, sudden changes and general outlines are subject to the gorgeous nerve ganglia of the cranium. Hence the psychologists, physiologists, anatomists and sculptors are gradually growing closer as investigators and delineators. All must have co-related curriculae in order to best prosecute their respective labors.

John W. Vanderpoel, one of Chicago's well known facial artists, writes: "No matter how intimate your knowledge of a part may be, it is only of value when it co-exists with an appreciation of its relation to the entire structure. Is his excellent article on "The Construction of the Human Face," which appears in the July issue of the Sketch-Book of 1903, there are many ideas which can be of service to the dentist. Of all the descriptions relative to the harmonious proportions of the mouth this sketch seems by far the most natural. I have the honor of possessing the original drawing and you will doubtless agree that his delineation of the normal pose of the mouth is essentially natural. Among other things he makes this observation: "The mouth, like the eye, is capable of great movement, and in unison with it forms the means of infinite variety of expression which plays in quick succession over the human countenance. Because of this mobility of expression and the softness in texture of the lips, care should be taken not to detach the parts one from the other beyond accentuating their separation at the middle and corners."

This field of study or research has scarcely been touched by our students of dental art and science. Let the investigators of our profession give us some definite information on this fascinating subject.

ALWAYS READY TO BE CHEATED.

If you wish to get rich in a hurry
Invent some ridiculous scheme
For hoodwinking people—don't worry,
No matter how poor it may seem;
Promise something for nothing; the plainer
It is that your plan is a fake
The surer that you'll be the gainer,
The surer the thing is to take.

It would be most deliciously funny,
If it weren't so tragic, alack!
To watch people handing in money
Where there's no chance of getting it back;
It is useless to warn or advise them,
For the wise man by whom they are checked
Is hated as one who denies them
The triumphs they vainly expect.

They'll regard you with cunning suspicion
If your plan is a feasible one;
If you offer a fair proposition
They will cling to their purses and run;
But if you'd get rich in a hurry
Propose some ridiculous scheme;
The crowd will be eager—don't worry—
No matter how poor it may seem.

S. E. KISER.

(That is the reason why truth is stranger than fiction. Offer a dentist something along dental lines, and prove to him that he can save money in the purchase of goods, or books, he will be utterly indifferent to the proposition. Bring him mining or rubber stock of which he knows nothing, and he puts up his money.—EDITOR.)

SPECIAL CONTRIBUTIONS.

WHY WELL MADE CROWNS AND BRIDGES OFTEN FAIL.

BY B. J. CIGRAND, B. S., M. S., D. D. S.

Experience has taught us that too frequently the crowns and bridges which we locate do not remain permanent fixtures in the mouth, notwithstanding our painstaking effort to cement them into position; they loosen and the crown or bridge either suffers damage or induces injuries to their supports. The problem before us is not the principles of crown construction nor bridge formation, but entirely the theme of anchorage. We assume that the technique of crowns and their logical assemblage is thoroughly understood, hence that feature does not engage in the present writing. But the proposition of attaching or anchoring the laboratorial product, that, indeed, is the primal topic.

It requires no lengthy word picture to supply the mind's eye with the frequent sight of an eliminated crown, with its metallic post, surrounded at the base with disintegrated cement, while the apex of metal is free from any material of attachment. The same applies to the loosened bridge. What is the difficulty, and what element of philosophy or chemistry have we overlooked, which induces this failure in an otherwise perfectly constructed and well-adapted dental substitute? This item of prosthetic procedure has been overlooked, since our practitioners were eagerly solving the equation of superstructure principles, forgetting or disregarding the important feature, the substructure. As in the field of human industry, the science of bridge building must teach us that foundations are essential. It is not enough to plan and arrange a cantilever bridge or old form abutment bridge, since the superstructure without a truly calculated base and its pillars, in ratio to stress and strain, the entire mechanically constructed structure will transform itself into a mass of worthlessness. And so with the appliances we hope to position and retain; they, too, deal with the problem of stress and strain, and a complex force, engaging partial rotation coupled with a lever power. Hence our product has more varieties of force to encounter and withstand than the stable, located railroad bridge. Yet from the engineers of the commercial world we

can learn much, and in bridge building we, as a profession, can get eminent lessons from the supposed inferior craftsman. Years of observation have taught the real bridge builder that the foundation is primal; that in more than sixty per cent of failures, a weak, insubstantial pier, abutment and shore anchor was the cause of the desolation of all. And when the bed upon which the bases and pillars rested were solid and unyielding, being anchored firmly into mother earth, the likelihood of damage to the bridge was lessened in direct ratio to the increased strength of foundation. May this not be the difficulty in part with our deficiencies in crown and bridge work? Do we not too often expect a bridge to endure upon weak and insufficient pillars? Are we not in huge spans assigning too much weight and wear upon a few roots instead of gathering support in the center by a root which we thoughtlessly extracted, thinking it too badly decayed or unnecessary? That apparent drone root, if properly prepared and accurately adjusted, would, in all probability, save the bridge from an overstrain on the outer or extreme anchorages. While the foregoing argument may be a partial cause for our failures, it is only the lesser fraction of the cause which induces and produces the eventual collapse of the bridge.

Our greatest mistake lies in the cold fact that we rely on cement as a means of anchorage. Our present method of cementing both crowns and bridges is at fault. We will not attain to that position of successful prosthesis until we recognize our shortcomings in this phase of restorative art. There is not in the market this day a cement which will give the desired result. All these materials of metallic oxyphosphates are too porous, and when employed other than in mere films are harbors of debris and soon lose the virtue of an adhering substance. Experiments innumerable lead me to conclude that cement in crown and bridge work is serviceable and endurable when employed in a thin or film amount; in mass it does not endure; besides, the fluids of the oral cavity penetrate it and sediments remain in these myriads of pores or minute caverns, inducing a conglomerated mass of putrid vegetable and animal debris. Evidence of this is present in a most emphatic character when we remove a gold shell crown, the odor from the sponge-life cement is pronouncedly disagreeable. This odor is ever escaping from crowns and bridges, especially from telescope

gold crowns and in large cement fillings, which we remove to replace with inlay or metal fillings—the same offensive odor is torturing the olfactory nerve. I need not dwell longer on the unsatisfactory results following the use of cement, since the evidence is indisputable. And what applies to cement applies to guttapercha, only in a more exaggerated character. Algebraically writing, we should say that the odor of guttapercha is raised to the highest power. The practice of setting crowns and bridges with the sap of the ismander tree is condemnable, and while many practitioners continue to advocate it there certainly is room for grievances against this temporizing manner of anchoring dental substitutions. Many of our practitioners entertained the idea of setting them with guttapercha, advocating that this material admitted of easy removal of the crown and also acted as a soft, yielding cushion for the porcelain substitute. I am not prepared to accept this method as practical or hygienic. I doubt the practicability of such a procedure; besides, it indicates a temporizing effort. But this is not the main reason for my objection to the use of guttapercha alone; I cannot believe that a crown which is set on a material which acts as a cushion is sufficiently dense to exclude the oral fluids. If it yields, springs and easily changes to accommodate every movement of the jaw and force of pressure, it goes without saying that the material is porous and consequently harbors the oral mucus and fluids, and this condition must speedily destroy its efficiency and finally act as a home of debris. Those of us who have had the misfortune or displeasure of removing a crown of this character, set with guttapercha, must remember most vividly the unwelcome aroma contributed to the office, not to mention the discomfort to the patient. This method of setting crowns and bridges with guttapercha has seen better days, and metal of a virgin character, supported by any of the good cements in film form, will give us the most satisfactory results.

While the method I advocate does not dispense with cements entirely, it minimizes its use, hence lessens its objectionable qualities. Under the lenses cement presents the appearance of furnace slack, huge holes, crystallized caverns and avenues, surrounded by deep pockets and communicating pores. When in film form cement is not so porous and will give better results as a substance for attachment. The mechanical woodworkers will inform you that glue em-

ployed in their film form will not only adhere better but last longer. May this not be likewise true of cements? Whether or not any experiments have led me to conclude that the cement problem in crown and bridge work resolves itself into the deduction that the less cement you use the better will be the results. Practitioners of this day and generation are still inclined to regard a root useless and worthless because a band cannot be fitted about it, when the root otherwise is in good healthy condition, with sound tooth structure as its asset. The reign of the forcep is still dominant in most offices, and a spirit of dental preservation has not fully taken possession of the profession. The looseness of a root need not necessarily indicate that it could not carry—and creditably—an individual crown. Accord this root normal masticatory exercise and the circulatory system will contribute new life to its adjacent parts, rejuvenating the membrane of attachment. Such a root can be brought back into service when properly assisted. These “drone roots” are often extracted when logic would dictate their retention. Give these roots dental antagonism—give them what nature intended them to have and a happy surprise will come speedily to the practitioner.

The method here described has been the result of nine years of practice and it merits my heartiest approval because of the surprising results obtained in employing metallic anchorage employed in cases of crown and bridge work.

This method I have advocated in four papers and three clinics, and the hundreds of dentists who are accepting this method are meeting with pronounced success in this departure of prosthetic technique and operative principle.

Not infrequently a root is perfect with the exception that either mesially or distally it may be decayed below the alveolar circumference, and by this method you simply ream out with burr the defective portion and allow the wax to dip down at this point, and when the crown is set you have the metal restoration both in the canal and partial circumference. This is so definite and easy a method that none should extract a root thus affected. Many such roots have been pronounced “unworthy” and extraction has been the climax; or when the root was allowed to remain the method of attachment was cement, and the result was that the small post of the crown, with its insuf-

ficient surface for cement anchorage, soon loosened and the cement bridge which was attached, regardless of its mechanical perfections, was cast aside as a failure.

Now we have depended entirely too much on the cement and have lost sight of the principle of "positive resistance," which can best be attained through the medium of a congenial and tolerant metal, which must be so formed as to come in direct contact and be in immediate apposition with the tooth structure, admitting to the cement or any indissoluble solidifying fluid or paste the function of uniting the metal to the tooth structure, causing an hermetical joint. When this is done you have performed the operation of definitely locating the crown or bridge. If I have convinced you of this prosthetic principle, be assured that the method I advocate will be easily understood and its procedures readily comprehended.

After you have trimmed the ragged circumference of these characters of badly decayed roots, ream out the decayed or broken-down structure, adapt your crown in the usual manner, and, after you have arranged for normal or convenient articulation and occlusion, remove the crown or bridge and adapt wax to the post to approximately conform to the enlarged root canal opening. The wax will possibly be in excess of requirement, but by heating same over the alcohol flame, varnishing canal with any disinfectant oil, reinsert the wax-covered post and repeat until absolute fit is obtained. You then proceed to invest the crown in your casting apparatus, and after freeing your investment of its wax pattern, and drying the mold, you introduce into the form the molten gold or acolite. While gold in this instance of restoration might seem imperative, a metal which is congenial to the tissues should only be used.

It might not be amiss to add that the form you give to the root canal will have decided effects upon the likelihood of the rotation of the crown when set. An absolutely round or circular opening is not advocated; an oval or rhomboidal opening will give best results.

In using the Ottolengui casal reamers it is a mistake to employ a large one. Choose a small reamer, and by giving it an anterioposterior movement you are enabled to cut an opening of an elliptical character, and you leave the root structure thick at its lateral sides, where the major strain falls and where the root must of necessity be

the strongest. Further, this rhomboidal opening allows the encased post to tightly hug the walls of the root canal and thus afford additional anchorage to the crown.

The Davis, Brewster and Justi crowns are in many respects an improvement over the Logan, inasmuch as the pin is smaller and more rigid, admitting of crowning small-rooted laterals and insuring permanent lodgment. I have obtained the best results from the Fellowship crown by fitting the post tightly and just before setting taking the crimping pliers and producing a wave in the metal post. This causes the crown to adhere tenaciously without contributing a strain to the material of attachment.

You may think me extreme when I say that every crown we set will serve its purpose immeasurably better if the post is encased in a metal which perfectly fits the root canal, hence this method can become an established procedure in the setting of all crowns and bridges, though its limitations are far from being transcribed by crown and bridge work. It can be most effectively employed as a means of restoring badly decayed molars and bicuspid and contributing to them practically their original strength and purpose.

An instance of where it can be conjointly used as both operative and prosthetic occurs in roots where the anterior half has chipped off or partially broken away the anterior circumference; and these cases are plentiful, besides they are of a character which would tax the ingenuity of the most patient operator. By the method I advocate, you simply force away the gum tissue with either cotton or guttapercha, dismiss the patient with appointment for following day; remove the packing and adapt wax to restore the lost tooth structure and when fitting post of crown, join the bodies of wax, making one mass of same; carefully remove entirely, cast as recommended, and when you adapt this crown to place you will have convinced yourself that a difficult task has been accomplished in an easy manner.

To those who prefer to use a porcelain facing and construct from it an individual crown the process is similar to preceding, with the only difference that you add wax on the lingual surface to conform to the bulge of the tooth then cast, and you have quickly and with little labor reproduced the missing dental organ.

My experience with the Logan crown has led me to discard it in

crowning small lateral roots, because of its soft, liable and yielding platinum post.

Often when these crowns are set on a small lateral root the circumference of the root will not allow a thick, heavy post. The result is the force of mastication bends the post and tips the crown forward, and makes it look about as coherent as the leaning tower of Pisa, and like this historic tower can be advertised to the world as standing so by either accident or design. But by enveloping this soft post with a metallic film or veneer you have completely overcome this weakness.

Sometimes it is desirable to build up the second bicuspid root to receive a gold crown and the old method is a failure. The all-gold shell, when telescoped over a large amalgam filling, often results in failure because of the action of the mercury in the filling, and when this filling is anchored by screws other than gold or platinum it will invariably result in failure, notwithstanding that the gold crown is constructed without a fault. The anchorage has been insufficient.

The base-metal screw oxidizes, thereby loses its hold on the root and comes away after but a short time of service. By packing the canal with wax, building it up to requirements and casting as to completely bring metallic body for gold crown adjustment the anchorage is permanent.

The method I bring for your consideration is not evolved to lessen our burdens as practitioners, though it does most pronouncedly simplify our task—but I advocate it because of its preservative and preventive dental principles.

EUROPEAN PROGRESS

EDITED BY THOS. L. LARSENEUR, D. D. S.
MONTREAL, CANADA.

METHYL SALICYLATE IN DENTAL THERAPEUTICS.

BY DR. RENE MANTEAU, PARIS, FRANCE.
(Chief of Clinics at the Dental School of Paris.)

Methyl salicylate was discovered in 1831 by Pagenstecher from the products of distillation of *spiraea ulmaria* (meadow sweet). It is obtained by distilling ess. of *gualtheria procumbus* (ericacious) with H²O.

The product thus obtained is rectified in a retort and decolorized with citric acid. The mixture is first well shaken and allowed to settle.

It is also prepared by synthesis, and this is the most employed mode of preparation, by the action of methylic spirits (*wood alcohol*) on a mixture of salicylic and sulfuric acids or by the action of salicyl chlorid on wood alcohol.

It is a colorless fluid having the following formula: C⁶H⁴ (oH) (Co² CH³) having a very sweet taste, boiling at 222° C., sparingly soluble in water, but freely so in alcohol or ether.

Inasmuch as we are interested with this compound, it is a powerful antiseptic, non-caustic as phenol, having an agreeable odor, having a *diffusion action* on the parts to which it is applied, due to the vapors which are given away constantly, and which may be absorbed by the tissues or the skin.

As has been demonstrated by Lavoisier and Lannois that methyl salicylate was absorbed by the skin, and transformed later on in the organism, into salicylate of sodium, however, it is preferable to the latter because it may be absorbed without passing through the stomach, therefore without causing stomachal irritation, and obtaining the same therapeutic result.

Til the present time, its use was limited to *biliary lithiasis* (gall-stones) or rheumatism, to combat pain where it acts as an analgesic and also as an antiseptic. Owing to its strong and persisting odor it was unbearable for some when used *pure*. - It was thought that beneficial results could be obtained from its use in dental therapeutics, owing to the fact of its analgesic properties and that it was readily

absorbed by the skin, and *a fortiori* by the mucous membrane. Furthermore it was surmised that methyl salicylate had a dissolving action on the phosphates, urates and bilirubinales which are present in rheumatism and biliary lithiasis.

Should this hypothesis become a practical fact, we would have at hand a very useful product in dental therapeutics. Indeed, its use would be of great value in pyorrhea alveolaris, where we have to combat pain, irritation and inflammation. It was first thought that it would act as an analgesic and antiseptic, as we are all aware that pyorrhea is an affection of microbic origin, and, that *its evolution and progress are caused by arthritism, having articular manifestations* (diabetis) *trophoneurosis* (tabes), etc., *salivary calculi*, all of which may be caused by *gout, arthritism, albuminuria*, etc. (Frey.) Following these deductions it could also act as a tartar solvent, therefore acting as a factor, which, in some cases, could prevent the causes of this disease, and in all cases act as an *antitartar*.

We will see later where these suppositions were to be confirmed in practice.

It is not my intention to make a study of pyorrhea. I only wish to point out the general predisposing causes (diabetis, rheumatism, etc.), and also the local predisposing causes (salivary calculi) through which we have attained a new method of treatment of this disease, a prophylactic as well as a curative treatment, based on the use of methyl salicylate, which has been applied to the gingival pockets, and which has been used daily by the patients themselves under the form of dentifrice. The results have been more than gratifying, not only did the painful symptoms of the disease disappear, but the morbid condition was checked and further formation of tartar prevented. In order to overcome the penetrating and disagreeable odor of methyl salicylate it was necessary to resort to a mixture of several essences, and thus a pleasing product was obtained; this also permitted the reduction of strength of the salicylates as in full strength its action was too energetic.

Why does methyl salicylate act as a preventative of tartar formation? We thought that the theory brought forth by Galippe in 1886 (*on the formation of tartar and salivary calculi, study on the production of calculi in general, presence of microbes and of their germs in secretions*) would at least partly help us to explain this phe-

nomenon. This theory was confirmed and applied to all the different parts of the human body and these experiments were followed by Galippe, Naunyn, Dufour, Gilbert and Dominici, Gilbert and Fournier, Hanot and Letrenic. In 1894, Galippe published a later study entitled: "*Critical and experimental researches on the genesis of pathological calcifications; on the production of calculi in general and particularly on the formation of tartar and salivary calculi.*" In this study, he demonstrates again that the precipitation of the terrous salts of the saliva were the cause of micro-organisms that it contains.

Tartar is a living substance; the micro-organisms contained in it are not accidentally united together in the deposit in which they are found; they are the agents and cause of tartar formation. Salivary calculi (glandular calculi or salivary ducts) have as basis of formation a certain foreign body, which passes into the duct or into the gland and there acts not only as a foreign body, but as a parasite. The formation of tartar has been well demonstrated by the microbic processes, which are actually used by isolating and through cultures which have been made of the different parasites contained in it. M. Galippe has made a plain evidence of these facts and has brought forth a well based proof of his affirmations by affecting the synthesis on salivary calculi and the theory that all calculous concretions of the organism were *essentially of microbic origin*.

But according to this theory, as a matter of fact, any given antiseptic would prevent the formation of tartar and calculi. Yes, given that these antiseptics would have a sufficiently long enough contact and action with the saliva.

Why, then, does methyl salicylate act better than other antiseptics? Its action is best because it diffuses through the skin or tissues; because it acts not only on the saliva in the mouth, but at its point of formation in the glands and because its action is somewhat permanent, the glands being saturated with it. Its action will be better understood when the chemical dissolving action which it has on tartar and its salts will be explained.

In fact, methyl salicylate was brought in contact with tartar first and afterwards with phosphate calcium; we are all aware that tartar is composed from 72 to 80 per cent. of terrous salts, which are themselves composed of 65 per cent. calcium phosphates and the balance of iron and magnesium phosphates, silica and fluorides.

It was stated above that methyl salicylate would dissolve both tartar and calcium phosphate.

Following these results and experiments, we highly recommend the use of methyl salicylate as a dentifrice as preventative of tartar formation and also as an antiseptic and analgesic, and finally in the treatment of pyorrhea alveolaris, where it may be used by both the operator and the patient.

CLEANING NERVE BROACHES.

Nerve broaches, especially when clogged with putrid pulp debris, are readily cleaned, if the broaches are pushed through a tightly spread piece of rubber-dam. The breaking of a broach during this procedure, is an indication that its point was dull or that it was intrinsically weak. At any rate, it is better to break a broach in this way than to have it break in the root-canal.—R. SURSEN, *Zahn-aerztliche Rundschau*.

TO DESTROY WARTS.

Dr. Budinger advises a spray of methyl chloride for a period of a minute. This operation should be repeated every other day. By this method of freezing the wart will soon disappear.—*La Clinique*.

ON THE USE OF PERHYDROL AS HEMOSTATIC IN DENTAL HEMORRHAGE.

BY DR. M. LICHTWITZ.

(*Deutsche Monatsschrift für Zahnheilkunde*, 1911.)

According to Dr. Lichtwitz, after extraction of teeth, patients should never be dismissed before the hemorrhage has completely ceased. A drop of perhydrol in the socket of the tooth or teeth extracted will at once arrest the flow of blood. The action of perhydrol will also be found that of a valuable hemostatic after the removal of pulps when there is hemorrhage, its action will also be found a powerful disinfectant having no irritant action on the tissues. The author has found it to be a very valuable remedy in the treatment of pyorrhea alveolaris, he claims that the action of

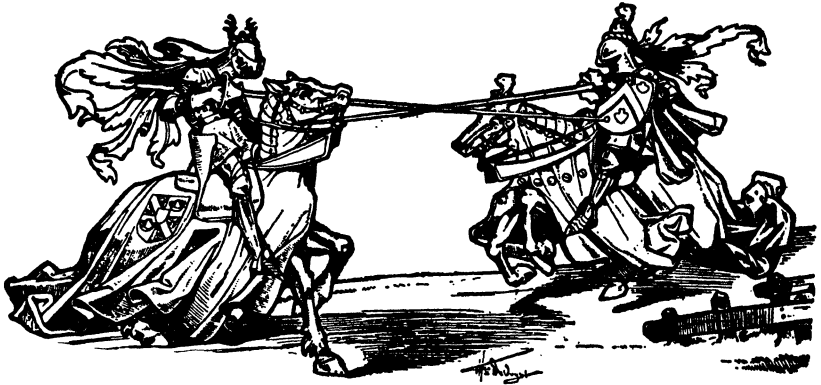
perhydrol is much superior and less dangerous than sulfuric acid. It may also be used in any inflammatory condition of the mucous membrane, also gingivitis.

TOOTHACHE IN THE TOOTHLESS.

Although this condition is not uncommon, the literature about it is most scanty. Melchor (*Ugeskrift for Læger*, Feb. 16, 1911), points out that the pain is situated in the alveolar process, and is most frequently found in the upper jaw. The area affected is usually small. It often extends only a few lines, and the soft tissues are but slightly or not at all involved. He believes the pain to be due to the compression of nerve endings in the alveolar border by dense, ivory-like bone, and states that when this is excised a prompt and radical cure is effected. How troublesome the condition may be is illustrated by the case of a widow, age 60, who had suffered from toothache since childhood; her last tooth, the right lower canine, which had long given pain, had been found loose and had been easily extracted about a year before she came under treatment. The pain continued at the site of the extracted tooth; it was shooting and intermittent, and was felt throughout the right lower jaw, whence it radiated to the temporal and retromaxillary regions, and down the right side of the neck. Chewing food sometimes excited attacks of pain, which grew in frequency and length till they were almost continuous and undermined her health. Mouth washes, painting the gums, and other treatment by various dentists were all ineffective. Pressure on a small area the size of a pea at the site of the lower canine was found to evoke an attack of pain. The gums seemed normal, but a skiagram showed the bone to be thickened at this point. Partial resection of the lower jaw, including the thickened alveolar margin, was followed by complete recovery.

Toothache in the toothless may be caused by a variety of other conditions, central or peripheral, the latter being the commonest. Chronic otitis and periostitis, inflammation of the cavities of the jaw, and old fractures may be causes, and all must be excluded before the surgeon proceeds any further.—*The British Medical Journal*.

PROFESSIONAL ARENA.



[In the space devoted to this department many of the so-called solved problems are to be opened for re-examination. Besides such other topics as are of greatest importance will be brought to the attention of the readers, and ablest talent will be engaged to discuss interesting dental themes. The subject under consideration for the present is: "Should the dentist charge by the time or service rendered?" We invite you to send in a short discussion on this problem. This is a topic in which all are concerned, and your opinion and experience is sought, as good will come from these comparative deductions.—Editor.]

THE DENTAL PROTECTIVE ASSOCIATION OF THE UNITED STATES.

J. N. Crouse, Chairman, 2231 Prairie Avenue.

Chicago, Oct. 5, 1908.

The Dental Digest,
\$2.00 Per Annum.
Dr. Richard Summa,
St. Louis, Mo.

Dear Doctor:—Yours enclosing circular with reference to the suit for infringement brought by Dr. Taggart against a member of the profession in Washington, D. C., duly received.

The movement is one entirely independent of the Dental Protective Association. Before the Association could take up and defend such suits it would have to be reorganized and put on another basis. Then, too, it is using its funds very close in other litigation and there would be but limited means to do with were it in its province to take up matters of this kind.

Yours very truly,

J. N. CROUSE.

(This is a verbatim copy. The original is on file at my office.)

Dear Mr. Editor:—

I request you to publish the above letter, because Dr. J. N. Crouse denied before an audience composed of members and guests of the National Dental Association that he had informed me that he had neither funds nor a properly organized association to take up the Taggart matter.

Dr. Crouse stated before the Iowa State Dental Association (Record for July, 1911, page 279) "I had the whip in my hand because I had the association and money to back it," etc. "I knew I could wear him (Taggart) out and he knew it and his lawyers knew it," etc.

The wording of his letter also indicates a vacillating state of mind. In view of the deal Dr. Crouse finally consummated with Dr. Taggart, the suspicion becomes justifiable that he was even at that time (Oct. 5, 1908) contemplating a perversion of the function of his protective association.

The apparent difficulty of bringing Dr. Crouse and the patentee to an agreement (described in "Record" and "Review") might be attributed to the histrionic talents of the president of the Dental Protective Association.

In a recent paper, which might have been more appropriately entitled "When is a process patent not a process patent?" and sung to the tune of "When is a door not a door?" Dr. R. Ottolengui, M.D.S., D.D.S., LL. D., brought out the fact that Dr. Crouse himself patented a cast filling within the last few years. This probably intensified his compassion for other process patent claimants.

I also possess a letter from Dr. J. N. Crouse in which he informs me that the membership books could not possibly be spared for copying the names of the members.

As a member of his Dental Protective Association, I fail to see any reason why I should not know who my fellow members are. Therefore I request other members of Dr. Crouse's Dental Protective Association who would like to find out what they have joined to communicate with me.

Yours truly,

RICHARD SUMMA.

JOURNALISTIC GEMS.

THE DOCTOR HIMSELF.*

BY MRS. D. A. K. STEELE.
(Wife of the Distinguished Surgeon.)

Great, indeed, is my subject, dating back, as it does, to the earliest period of history—possibly starting with that wonderful surgical operation performed on Adam, which certainly was a most commendable and successful piece of work.

Coming down through the centuries, constantly gaining new recruits from every avenue of thought, new consecration to the work, higher and nobler ideals, this vast army has advanced until the whole world is dominated to an amazing extent by their self-sacrifice, devotion to duty and great discoveries in the field of science.

Writers of all ages have deemed them worthy of their thought.

These doctors of fiction are truly a strange collection of freaks. and the things they do have scarcely a limit. We are thankful that they exist only in the imagination, but as types they are certainly amusing. Shakespeare's doctors are a grievous disappointment to us, and we are heartily glad there are so few of them. They did not appear to have been able to make a correct diagnosis any better than some of their brethren of later periods. Even the "English doctor that attended Lady Macbeth" did not consider her case at all serious.

We greatly doubt if the college which granted his diploma would meet the Flexner standard.

It may have been a similar state of affairs, and helps to explain what has heretofore been a mystery to me—the reason for King Cymbeline, when told of the death of his wife, deriving so much satisfaction and consolation from the thought that "death will seize the doctor, too."

The devotion of the doctors of the modern French writers to science is positively startling. Their knowledge of bacteriology, and the thrilling things they do along these lines makes one fairly shudder.

*Read at the banquet given by the alumni and faculty in the gold room of the Congress Hotel on the evening of June 5.

And who can ever forget Hawthorne's and Dumas' most fascinating doctors, who follow the Hindoo and East Indian types in their practice of mysticism and occultism; or Lytton's, who keeps one in such a constant state of wonder and excitement as to what they will do next?

I have mentioned these few types, which are so unlike our present ideals, only to illustrate how completely new forms of thought and feeling have supplanted the old beliefs that could not stand the test of scientific analysis.

The natural processes of growth as time goes on change most theories, and multiply the facilities for mental and scientific advancement; and no class of thinkers has been more benefited by these altered conditions than the doctor himself.

Upward and onward has ever been the watchword of this great body of unselfish, self-sacrificing workers, ever standing with outstretched hands to help those who faint and falter on the way, "covering with the sweet mantle of charity" the weak and erring, and with sympathy and kindly aid bringing comfort to sorrowing hearts.

Someone has truly said: "A doctor's work is as broad as the world in its benefits; his mission not to any class, but the entire human race."

"We boast of the heroes
Who fell in the fight
Battling and struggling
For justice and right."

We concede to these all glory and praise; but what shall we say of others, greater even than these, who in the time of plagues and great calamities are found where even the bravest of all others fear to go, forgetting self, willing to give all—even life—that the suffering and needy may be helped and saved? Uncrowned kings of earth are they—greatest of all heroes!

There is a beautiful legend of the sweet-toned bell of the angels in heaven, which softly rings at twilight. Its notes make a music of surpassing sweetness; but none can hear it save those only whose hearts are free from passion and from all sin. I love to think that among the followers of Æsculapius are to be found many self-sacrificing, consecrated souls who from their devotion to humanity are pure enough to hear the music of the heaven-rung vesper bell.

We are living in an age when sympathy and help to earth's lowly ones, the betterment of social conditions along all lines, may be said to be the great central thought that is "throbbing in the breast of universal humanity."

In all of those great enterprises foremost among the workers is ever to be found the doctor himself, giving not only of his time and strength, but of his substance also. Since the dawn of civilization there has never been a time when the struggle to reach the top has been as strong as at the present; never a time when competition so powerful. New systems are constantly supplanting the old, calling for a higher degree of excellence. In every department of human activity the struggle becomes more intense; old workers are thrust aside for those schooled in new methods who can bring into the work new strength, and whose enthusiasm sees no limit to the possibilities which the future holds.

This is a fact in spite of the formation of rings and trusts or the assertion of those who claim that the marked tendency of the age is towards a leveling process in individual development.

There is no place in this intensely practical age for idle dreamers, only those whose aspirations are high, who undaunted by obstacles steadily press onward, can ever hope to win a place in the struggle for supremacy. If I were asked what is needed most of all successfully to meet and conquer these conditions, I should say, "Hard work and high, earnest ideals." Life must all be hard and no one knows this better than the doctor himself. Genius is much, but not all. I think it was Milton who said: "Genius is a lighthouse meant to give light from afar; the man who bears it is but the rock on which this lighthouse is built."

Aspiration is the divine force which gives to the world great writers, doctors and inventors. It is the power which enables the workers to suffer privations, scorn, and even persecution, that great results may come at last.

We see a surgeon by his skill and scientific knowledge save and prolong life—a picture that by its beauty or pathos moves to the depths our emotions; or the great engine, each part working in perfect harmony. But we do not see the sleepless nights, the heartaches, the bitter failures and tears, the drudgery, that preceded this finished work, this "triumph of a soul."

A few years ago I stood with a party of friends on the deck of a little Alaska steamer in the early morning hours. About us in solemn grandeur rose lofty mountains whose peaks are ever crowned with the eternal snows. Past us in solitary state moved icebergs of all sizes on their silent journey to the sea.

We were waiting for the rising sun.

We had seen him draw his glorious curtain of crimson and gold as he sank to rest but two short hours before, and felt that nature had shown us her sublimest glories. But not so! As we watched a faint glow appeared on the topmost point of Mt. Fairweather, which spread and spread, increasing in intensity until the whole range seemed covered with celestial fire. Peak after peak caught the crimson glow; every spire of the mighty glacier sparkled with a thousand changing tones of color. We seemed sailing on a sea of molten fire.

Over all brooded a silence which spoke more strongly than words of the rest which will come to us all by and by.

It seemed as if all nature stood transfigured in the presence of infinity. Can any words express the impression that scene made on our hearts?

We were lifted above all the littleness of thought and purpose which is the ruin of so many lives. So do we wait for the coming of those whose efforts will be crowned with success. It is even a more sublime spectacle to see one with noble aims, who lighted by the divine fire of truth and love for humanity, wavers not in the upward course, heeding not what the world may say, keeping ever in view the great objects of life.

There is no class from which the public demands as much as from the members of the medical profession.

The doctor must be a marvelous combination of every possible attribute that goes to make up mental, moral and physical perfection, as "true a knight and as full of chivalry as any of the heroes in armor of the olden time."

His reward! Well, largely a commending conscience, the satisfaction of having done his duty as he sees it. Philosophers are not all doctors, but all doctors must be philosophers. Doctors render more gratuitous service than any other class of people in the world, and get less thanks for it. It is one of the penalties of greatness

"that, living or dead," there is no protection from the criticism of those who from varied motives make free with name and reputation. Few natures are broad enough to judge others unbiased by personal feelings.

He has no time he can call his own; perils from many sources are ever about him. No one but the doctor himself knows how great are the burdens he daily bears; how much courage is needed to succeed.

It takes courage to fight the battles of life, to do straight, honest work, and see others, by dishonest or dishonorable means, gain greater fame and wealth. It takes courage to remain silent when misjudged or misunderstood. It takes great moral courage to stand up for a principle, to put the success of a cause or an institution before self, to sacrifice personal ambition for the sake of devotion to duty.

The true doctor himself has something greater in himself than his occupation or his achievements.

The world has not as yet comprehended his greatness nor appreciated the service he renders to humanity; the influence he exerts in every department of life the world over. His example has been an inspiration to the purest and highest ideals.

Shall we class him with the great ones of earth? Most assuredly. No man is greater in the purity of his life, his fearlessness, his devotion to duty, nobleness of purpose, dignity of character and professional enthusiasm than the doctor himself.—*The Plexus*, June, 1911.

A PROFESSION IN WHICH THE DEMAND EXCEEDS THE SUPPLY.

BY COLONEL CHARLES R. E. KOCH.

(The following article recently appeared in the Record Herald, and comes from the pen of Col. C. R. E. Koch. The article treats the growth of dental colleges and gives a bright future for the prospective student.—EDITOR.)

The late Dr. W. D. Miller of Berlin, Germany, and later of Ann Arbor, Mich., referred to dentistry as a self-made profession—as the education given by the dental schools of America to over 41,000 graduates from 1840 up to 1908 was accomplished without any special endowment fund, and was financed almost entirely by the moneys derived from the tuition fees paid by the students.

Prior to 1860 there were only three dental schools in existence

is the United States and Canada; prior to 1870, only ten, and prior to 1880, only seventeen. Very few of the dentists who served the people before 1870 had any collegiate dental education; they were prepared for the practice of their calling by preceptors, who, in many cases, had "picked up" their own knowledge and what skill they possessed. The total number of dental graduates from all the schools existing up to 1880, and beginning with the first dental college organized in 1839, was 3,117, of whom 1,872 entered in the decade from 1870 to 1880.

The decade of 1880-90 was the awakening period of the dental profession as to its own educational needs, and the thoughtful men in it not only became active in the organization of more institutes of dental learning, but they also launched an earnest propaganda in the direction of educating the public in the knowledge of the benefits to be derived from dentistry. They induced the legislatures of many states to take steps to secure uniformly better dental service to the people thereafter by the establishment of state boards of dental examiners. All new practitioners had to appear before these boards and show their qualifications before they were allowed to practice. In Illinois in 1881 only about 5 per cent of the 800 dentists had had any collegiate dental instruction prior to that date, and this was a fair picture of conditions in other states. The medical profession during this period was not much better off in this respect, as medical collegiate education before beginning practice was not compulsory.

From 1880 to 1890 there were 33 dental colleges, which graduated 5,781 students. From 1890 to 1900 67 dental colleges graduated 14,787 students. The period of 1880-1900 was a time of probation and experimentation. Many of the state laws at first required the granting of licenses to the holders of diplomas from reputable dental colleges and directed examinations to be given only to those who had not graduated. When boards exercised their functions conscientiously they refused to grant licenses to improperly prepared applicants. These were driven to colleges for refuge—and a diploma. A dental course at first covered only two school years of five months each, and credit for one year's work was given for five years of previous practice. So, given a willing and collusive school, liberally inclined, the degree might be granted in five months, and the board had to issue the license when the diploma was presented.

The evils of this condition became more strikingly apparent in Illinois and in Chicago than anywhere else. The demand for dental diplomas to avoid the necessity of taking the board examinations became so strong that nineteen dental colleges were chartered and lived for a time in Chicago from 1885 to 1900. The board refused recognition to the diplomas of some of these, and as a result had to defend its action in the courts. This condition of things led to the enactment of the law of 1905 in Illinois, by which all graduates of reputable dental schools are required to be examined and approved by the state board of dental examiners. Only graduates can be admitted to the examination, except that graduates of medicine and those who have been in legal practice in other states at least five years immediately preceding their coming to Illinois may also be examined. There are three dental schools of recognized standing in Illinois located in Chicago, and fifty-seven in the United States and Canada. •

There is now no state in the Union or province in Canada in which the diploma itself gives a license to practice, but in some states a diploma is not recognized as a necessary preliminary for admission to the examination for license by the board.

The dental act of Illinois gives the board of examiners power to establish a preliminary educational requirement of dental students and to establish a standard for dental colleges and courses of instruction that shall constitute them as reputable within the meaning of the law.

Early in the eighties the leaders of progressive thought among the dental colleges realized the benefit of affiliation with each other in the furtherance of better dental education, and formed themselves into the National Association of Dental Faculties; at the same time, or a little earlier, the various state boards of dental examiners also realized that greater good to the entire country might be secured by associated plans that would bring the work of the several boards more in harmony and make them more effective in the several states, and organized the National Association of Dental Examiners. To the existence of these two associations the progress of higher dental education is largely due. The dental course was raised to three years of five months, then to three years of six months, then to three years of seven months, and then to three years, each of thirty-two weeks of six days of actual teaching.

At first no educational entrance requirements were asked for from the student; then a completed grammar school was demanded; later, and up to 1908, most schools required two years of high school work; then three years of high school work was required. Beginning with the present year all recognized dental colleges demand a completed high school course, or its equivalent, and the equivalent must be measured by an examination by a specially appointed deputy of the state superintendent of public instruction.

The three dental schools of Chicago agreed among themselves in 1904 that beginning with the year 1906 they would require the possession of a completed high school education as their entrance requirement, and since that date they have adhered to this standard. About one-half of the American schools also adopted this requirement at the same time, while others continued with the lower requirements until the present year.

There is now a greater popular awakening among the intelligent people of all classes regarding the importance of the healthy condition and functional usefulness of the teeth and mouth. The mouth is recognized as a port of entry to the human body, and the educated dentist is the faithful harbormaster. Standing as the trusted sentinel at so important a post is no mean or degraded station. It matters little to him, or to his patients, whether he has the right to write M. D. after his name or not, whether he is called doctor or dentist. His life is too strenuous and the call for his service to suffering mankind too loud to waste much time or worry over a mere title. Certain it is, there is today a brighter prospect for constant employment and resultant compensation for himself for the properly trained dentist than for followers of almost any other professional pursuit, excepting perhaps electrical engineering.

The country has grown by 15,000,000 in the last ten years, and demand for dental services per capita of inhabitants has grown even more, but the number of graduates in the dental schools has actually been less during the last five years by 200, or 18 per cent, than it was during the preceding five years.

There are less than 40,000 practicing dentists in the United States and Canada. This would give about 2,600 population to each dentist. In order to secure an average income of \$2,000 for each dentist it would be necessary for every person to contribute an aver-

age of 77 cents per annum. There is about one physician to every 550 population, which involves an annual contribution of \$3.06 from every person to secure an average income of \$2,000 per annum for each physician.

It will be noted that the falling off of the number of dental graduates corresponds with the period during which the preliminary educational requirements were advanced. Assuming this to be not only a coincidence, but a consequence, it would seem that in the interests of humanity it would be unwise at this time to demand that dental articulates should have one or two years of liberal collegiate training before admission, because this would still further decrease the annual "output" of trained dentists, or as well trained as three years' time in a dental school, following a high school education, will make them, to meet the demand of a suffering people. For the present this seems to be the best that can be done. When we have a higher appreciation of dentistry by the masses of our people, an appreciation which is rapidly developing, an increased number of young men of a higher degree of preliminary education will come into the dental schools and become prepared to give still better service.

One of the most thoughtful and conservative men in the dental profession said to the writer not long ago: "If the school children in Chicago schools should receive the attention their mouths and teeth demand there are not dentists enough in the State of Illinois to perform the service."

PLATING PLANT.

Some sort of a gold-plating plant seems an important auxiliary to the dental equipment of today.

A simple one is made up of a glass pickle jar of convenient size with a cover to prevent evaporation and exclude dust, containing a fluid composed of 30 grains chloride of gold, Merck, U. S. P., 60 grains cyanide of potassium, and one-half pint of distilled water, operated by a single cell Sampson battery. A piece of pure gold is attached to the carbon wire and suspended in the fluid, while the article to be plated is attached to the zinc wire and likewise suspended, care being taken that the gold and the article to be plated do not come in contact while in the solution.

In place of the Sampson cell, the wires may be connected with the ordinary electric lighting supply, in which case the current is run through a series of lamps to reduce it.

In the latter case, the piece to be plated is left in the solution perhaps five minutes, when it is taken out and polished; this process is repeated several times, according to the amount of plate desired. Placing the jar of solution in a hot-water bath facilitates the work.—*The Journal*.

SOLDERING.

It must be borne in mind that to effect a union between two metals these must be free from any substance which heat will not remove. If the surfaces of metals are oxidized, the molecules will not unite. As the gold plate we use is never pure, and as the solder used is less pure than the plate, both would oxidize under heat and fail to unite. To prevent this a flux is used, which is generally borax, either alone or in combination, such as—

R—Boric acid	3ss
Muriate ammonia	gr. xj
Carb. potassium	gr. v
Borax pulv.	3ss
Aq., q.s.	M.

When the surfaces to be united are coated with a flux and heated, the borax fuses and spreads over the surface in the form of a "glass," thus keeping the air from coming in contact with the parts, and preventing oxidation. The borax probably plays a minor part in dissolving any oxidation that previously may have existed on the surfaces. Too much borax will cause the solder to flow beyond its intended limit, while too little will not entirely prevent oxidation. It is not, however, the process of uniting metallic surfaces which brings trouble to the dentist, but the act of soldering metals in the presence of porcelain. Metals may be heated to any point short of fusion, slowly or quickly, without materially affecting the process of soldering, but where porcelain is present it must be both heated slowly and cooled slowly, in order to avoid checking. When metals and porcelain are in contact, the difficulty of heating both uniformly is greatly increased, because one is a good conductor of heat, while

the other is a poor one. If the temperature be raised much in advance of the porcelain, the latter will be fractured by too rapid expansion. To avoid this, it becomes necessary to incase them in a substance which will both protect them from direct flame and insure gradual heating. The enveloping material must be such as not to be affected by heat, and of sufficient quantity to allow the heat to reach the porcelain equally and slowly. Sea sand, pumice stone, and marble dust, or pulverized asbestos, usually form the bases of an investment, while plaster is used to hold the material together, and form a mass which will retain the teeth and plate in proper relation to one another during soldering, as plaster is liable to crack and change its form under heat. Only enough should be used to hold the other substances together. Excess of plaster is the cause of cracking of an investment, which is also frequently attended by fracture of the porcelain: Sea sand, 4 parts; plaster, 1 part; large investment—pumice, plaster, equal parts. After the hard wax which holds the parts in position has been removed, the pins and all exposed metals should receive a slight coating of borax. The investment should then be placed on a slow fire and heated well. The solder is cut into pieces about one-eighth inch square and dipped in borax. In bridge work a small quantity of solder should be used first, as it is more likely to find its way into obscure places. After the first portion has been melted and flowed into deeper parts, more may be added, and the soldering completed. In this way more perfect results will be obtained. In all cases the investments should be placed so that the teeth are heated first; the porcelain then expands and also allows the platinum pins to do likewise. The flame should not be placed upon the backing until the solder shows signs of melting, after which a fine flame should be kept on the solder till it flows. Pins should not be riveted but bent to hold backings in place. The piece should be covered immediately after the soldering is finished, for uniform cooling.—R. Sutherland, *Commonwealth Dental Review*.

VULCANIZED RUBBER.

Until the discovery by Charles Goodyear about 1848 the employment of caoutchouc was limited. The so-called vulcanizing process of Goodyear consists essentially in heating india-rubber with sulphur

at a proper temperature. When caoutchouc is kneaded with flour or sulphur and heated to about 112 degrees C. (122 degrees F.), it takes up a certain portion of sulphur and acquires new properties. It remains perfectly flexible at temperatures below zero C., and does not soften at 50 degrees C. (122 degrees F.), whereas ordinary caoutchouc becomes perfectly rigid at temperatures several degrees above the freezing point, while a moderate heat renders it so soft and adhesive as to be useless. The proportion of sulphur in the caoutchouc varies according to the use for which it is intended, the hardness of the product varying in like proportion. Hardened caoutchouc (ebonite) is produced by mixing it in the kneading machine or between rollers with half its weight of sulphur, rolling into sheets, and handles, ing it for two hours at 100 degrees C. and then at 150 degrees C. for four hours. It serves for the manufacture of combs, knife handles, dental plates, etc. The hard and fibrous variety of rubber is the best for the production of ebonite. The dental rubber may be said to consist of one part of sulphur to two parts caoutchouc, with the addition of various coloring matters used, i, e., vermilion for red rubber, white oxid of zinc for grayish white, oxid of zinc and vermilion in varying proportions according to the depth of pink color required, and ivory black for black rubbers. Dr. Thomas W. Evans of Paris was the first to make a dental plate of hard rubber, and in doing so applied steam heat for the vulcanizing process.—*Chemist and Druggist*.

TO MAKE SOLID GOLD DUMMIES.

In constructing a bridge where the teeth are out of sight, or where you want to make an all-gold bridge, a very nice and accurate way to make the dummies is to select suitable teeth for the case and articulate them, then use these same teeth from which make your moulds. To make the moulds, set the teeth in mouldine pins down, leaving the buccal and grinding surfaces exposed; set your rubber ring over them; melt your fusible metal and pour it in; after the metal cools, remove the tooth, and you have a nice mould in which to make your inlay-wax model; now cast your tooth from this wax model the same way as you would cast an inlay.—Dr. E. T. McKim, Schell City, Mo., *Western Dental Journal*.

"IF."

BY RUDYARD KIPLING.

If you can keep your head when all about you
Are losing theirs and blaming it on you;
If you can trust yourself when all men doubt you,
But make allowance for their doubting too;
If you can wait and not be tired by waiting,
Or being lied about, don't deal in lies,
Or being hated, don't give way to hating,
And yet don't look too good, nor talk too wise;

If you can dream—and not make dreams your master;
If you can think—and not make thoughts your aim;
If you can meet with Triumph and Disaster
And treat those two Impostors just the same;
If you can bear to hear the truth you've spoken
Twisted by knaves to make a trap for fools,
Or watch the things you gave your life to, broken,
And stoop and build 'em up with worn-out tools;

If you can make one heap of all your winnings
And risk it on one turn of pitch-and-toss,
And lose, and start again at your beginnings
And never breathe a word about your loss;
If you can force your heart and nerve and sinew
To serve your turn long after they are gone,
And so hold on when there is nothing in you
Except the Will which says to them: "Hold on";

If you can talk with crowds and keep your virtue
Or walk with Kings—nor lose the common touch,
If neither foes nor loving friends can hurt you,
If all men count with you, but none too much;
If you can fill the unforgiving minute
With sixty seconds' worth of distance run
Yours is the Earth and everything that's in it,
And—which is more—you'll be a Man, my son.

EVERYBODY'S CORNER

Dentist Travels 6,000 Miles to Fix Tooth.—Temporarily forsaking a dental practice, the patrons of which include some of the crowned heads of Europe, Dr. Daniel Hally Smith of Paris has traveled 6,000 miles to rectify some work he did for a California millionaire.

Sues Dentist.—Dr. C. H. Randall, a practicing dentist in Baltimore, Md., has been sued for \$10,000 by one of his patients, who claims he extracted a part of her jawbone.

No Women Dentists in Kansas.—Kansas is one of the three states which have no women dentists. The other two are North Carolina and Idaho. This is somewhat unusual for Kansas, where municipal suffrage prevails, where nearly one-half of the county superintendents are women and where the only woman in the world is probate judge.

Dies Under Chloroform.—Mrs. E. Hoffmann of Wabasha, Minn., died in the dental chair in the office of Dr. T. J. Moore of Plainview, Minn. She died while under the influence of chloroform.

Woman Dentist Found Unconscious.—Miss T. Hunt, a dentist of Chicago, Ill., was found in an unconscious condition at Crystal Lake, Mich. It is believed she tried to commit suicide.

Dentist Injured.—Dr. George L. True, a practicing dentist in Cambridge, Mass., was injured recently while attempting to repair his automobile. He stepped in front of the car and it started at full speed, knocking him down and passed over his body.

To Teach Care of Teeth by Films.—Horace Fletcher has just been elected president of the National Oral Hygiene Association, organized to institute a moving picture campaign throughout the country to educate the public in the care of the teeth.

Explosion Injures Dentist.—Dr. Harry Silver, assistant to Dr. David Longnecker, New York City, N. Y., was probably fatally injured recently when the vulcanizer he was using exploded and hurled the steel top against his head, fracturing his skull.

Three Doctors Injured.—Three dentists were seriously injured when an automobile in which they were riding was struck by a car. The doctors are A. Burrell, D. M. Gallie and E. Fredericks, all of Chicago, Ill.

Extracting Tooth Nearly Kills Child.—As the result of having a tooth extracted, Joseph Stein, a 17-year-old boy, had a narrow escape from bleeding to death. He was attacked with hemorrhages lasting more than six hours and it was necessary to call a physician.

Dental Office Destroyed by Fire.—The dental office of Dr. John H. Malony, a practicing dentist in New Market, Iowa, was destroyed by fire recently.

IN MEMORIAM.

Dr. Horatio C. Meriam, one of the best known dentists in Massachusetts, died recently at the age of 62 years. He is survived by a widow and five sons.

Dr. W. Keyt, a practicing dentist in Denver, Colo., died suddenly of heart disease. The doctor was fifty years of age and is survived by a widow, two sons and a daughter.

Dr. John D. Nicol, one of the most prominent dentists in Peoria, Ill., died recently. He is survived by a widow and one daughter.

Dr. William A. Buscho, a practicing dentist of Chicago, Ill., died following an operation for appendicitis. He was recognized as an authority on pyorrhea and was regarded as a coming specialist of note. He was thirty-four years of age and leaves a wife and infant daughter.

Dr. J. J. O'Connor, a practicing dentist in Worcester, Mass., died February 13th. Death was caused by pneumonia. He is survived by a brother and three sisters.

Dr. A. H. Bumpus, a practicing dentist of New Orleans, La., was drowned February 8th.

Dr. William Richards, a practicing dentist of South Pasadena, Cal., committed suicide.

Wanted**For Sale****Exchange**

NOTE:—Advertisements in this Department not exceeding fifty words will be published Free for three insertions for subscribers whose subscriptions have been paid for one year in advance.

Advertisements under regular heading from non-subscribers will be inserted for a charge of five cents per word. Remittance in full must accompany such copy.

Copy must be on file in our office by the 15th of the preceding month in which insertion is desired.

In answering these advertisements through the American Dental Journal, enclose your answer in stamped envelope with the advertiser's letters marked on the corner. No unstamped letters will be forwarded.

We are not responsible for any advertisement appearing in these columns.

PUBLISHERS.

FOR SALE—Eight-room house beautifully located, \$1,800, also heavy office furniture, almost new, \$400 or \$500. Three rooms in new brick, rent \$10.00, population 800. Rich farming community. No competition, prices equal to your nerve. This is a good opportunity for a recent graduate who has not got outfit or location. Address, Dr. F. U. Emley, Belle Plaine, Kans.

FOR SALE—Elgin Casting Appliance, in good condition with gold traps under arms. Price \$15.00 complete. Address "Cast," care American Dental Journal, 39 State street, Chicago, Ill.

FOR SALE—Four-room dental office and four-room cottage in an up-to-date southern town. Practice established eleven years. Good reason for leaving. Buyer must have cash. Address "W," care Dutro & Hewitt, Memphis, Tenn.

FOR SALE—An attractive practice and outfit in good South Dakota town. Change of business and climate desired. Address "C. H.," care S. S. White Dental Mfg. Co., Chicago, Ill.

WANTED—Dental practices. My method of finding buyers is successful. No publicity for you. Write for information. Unlocated dentists write for bargain sale lists. Mention states desired. The Dentists' Middleman, C. M. Cryor, D. D. S., Box M., Franklin Grove, Ill.

FOR SALE—A good dental practice and equipment excepting working instruments, reasonable rent, long lease if desired, handsome rooms, good light on ground floor, in an agricultural town, Central-Western Illinois, established 15 years; \$100.00 buys everything, including unfinished work, if taken quick. Address, T. K. G., care American Dental Journal.

Acute Inflammation

A patient applies for treatment with a jaw so swollen and painful that it is impossible to open the mouth sufficiently to make a proper examination, much less do any operating.

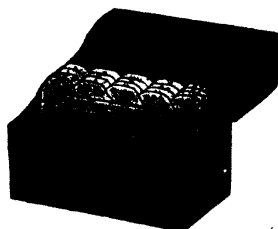
We are constantly receiving reports from dentists who have treated such cases with a thick hot dressing of Antiphlogistine, to find that in twenty-four to forty-eight hours the swelling and pain have so far disappeared as to allow of proper operative procedures.

But—"A stitch in time saves nine." Antiphlogistine used when the inflammation is beginning will prevent the serious condition pictured above.

THE DENVER CHEMICAL MFG. CO., New York

American Dental Card System No. 3

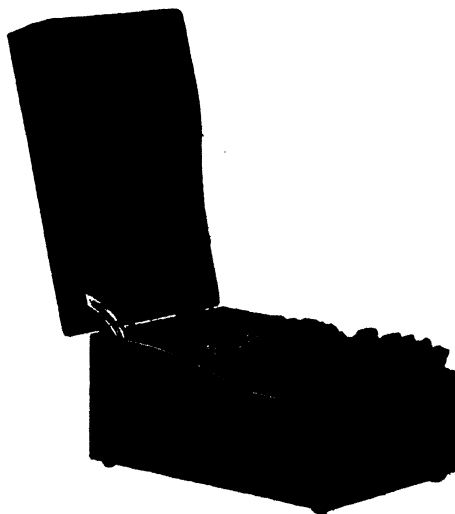
In handsome oak case with cover.



Contains 200 3 x 5 cards (see page 5). 1 set index cards.	\$1.50
Price prepaid.....	
Case only, prepaid.....	\$1.00
Extra cards, prepaid, per 100.....	.30
Extra indexes, prepaid, per set20

American Dental Card System No. 4

In handsome oak case with oak follow blocks and rubber feet.



13 inches long, to hold 1200 cards. Contains 300 4x6 cards (see page 5).	
2 sets of index cards, different colors. 15 cash cards.	
Price.....	\$4.50
By express, prepaid.....	\$5.00
Extra cards, prepaid, per 100.....	.50
Extra index cards, prepaid, per set.....	.30
Cash cards, prepaid, per set of 15.....	.15
Case only.....	2.50
Case only, by express prepaid.....	3.00

ORDER FROM

AMERICAN DENTAL JOURNAL
177 N. State Street, CHICAGO.

By mentioning the AMERICAN DENTAL JOURNAL when writing to Advertisers you will confer a favor upon both the Advertiser and the Journal.

DOCTOR!

*Read this Advertisement and see if it
does not appeal to YOU.*

Chloro-Mentholin R 801

THE WONDER OF THE CENTURY

The only Anæsthetic ever put on the market which will produce a perfect Anæsthesia *without the use of the hypodermic needle.*

Why torture your patients with the old-fashioned method of injection?

YOU KNOW IT HURTS

Chloro-Mentholin is not to be *injected*, but *applied to the gum tissues with pledget of cotton*, Anæsthesia being obtained by *absorption* instead of through the *circulation*.

CHLORO-MENTHOLIN R 801

Contains no Cocaine, Morphine, nor any of their derivatives.

Chloro-Mentholin is a matchless preparation for the extraction of

DECIDUOUS TEETH

Chloro-Mentholin positively has *no toxic effect*.

Chloro-Mentholin R 801 is unexcelled as a *Hemostatic*, and for *pain after extraction*.

Sold to you under positive guarantee by your supply house.

Chloro-Mentholin is *not a secret preparation*. Full directions and formula on every label.

CHLORO-MENTHOLIN R 801, PRICE \$1.50

MANUFACTURED ONLY BY

Western New York Chemical Company

MANUFACTURERS OF "HIGH-GRADE" DENTAL MEDICINES

Buffalo, N. Y., U. S. A.

Write for price list and literature on dental preparations

We do not sample.

On sale at all supply houses.

By mentioning the AMERICAN DENTAL JOURNAL when writing to Advertisers you will confer a favor upon both the Advertiser and the Journal.

FOR SALE—Rare opportunity for live dentist, good sized floor with 200 square feet of window space, facing the busiest corner in a city of 90,000. Address Box 201, Yonkers, N. Y.

FOR SALE—Oil chair, cabinet, bracket and table, all Harvard; A1 condition. Address J. L. F., care American Dental Journal, 177 N. State st.

FOR SALE—One of the best located offices in the state. City of 16,000. Fine practice. Have had enough practice most of time for two men. Have other business; will probably teach in dental college. Seven rooms so arranged family can occupy. Price, \$700. Address Dr. F. M. Harrell, Cairo, Ill.

PATENTS procured promptly and properly in all countries.
Also trade marks and copyrights.

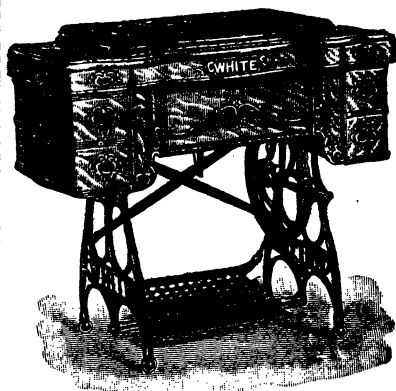
DAVIS & DAVIS

Attorneys-at-Law

opposite Patent Office, Washington, D. C.

NEW YORK OFFICE: 220 Broadway

Our No. 35 Rolled Edge Automatic Lift White



A handsome finely finished machine, furnished with Rolled Edge Renaissance design woodwork, in quarter-sawn golden oak, fitted with automatic lift, nickel-plated hand-wheel, beautiful hanging center panel, three drawers at each end of table, ball bearings, and a complete set of the latest style steel attachments.

Repairs and Parts for all Machines
Machines taken in Exchange
WHITE SEWING MACHINE COMPANY

No. 24 N. Wabash Ave., Near Madison St., CHICAGO
GEO. E. CAUGHEY, Manager

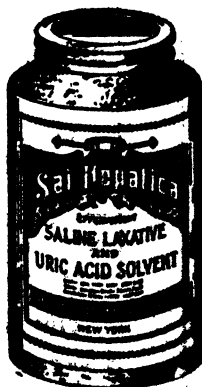
FOR RENT—Office in fine location.
Dr. Stewart, 4200 W. Lake Street,
Chicago, Ill.

PYORRHEA

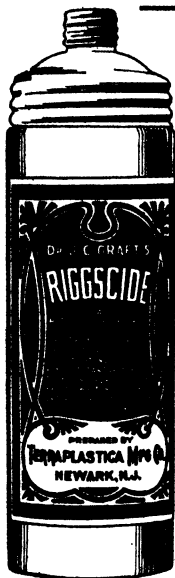
Owing to the value of Sal Hepatica in the treatment of diseases of the uric acid diathesis it has been found specially beneficial in pyorrhea alveolaris, a malady in which rheumatism and gout are potent causes. It contains the salts similar to the celebrated Bitter Waters of Europe, fortified by addition of Lithia and Sodium Phosphate. It stimulates liver, tones intestinal glands, purifies alimentary tract, improves digestion, assimilation and metabolism.

Write for free samples.

BRISTOL-MYERS CO.
BROOKLYN-NEW YORK



By mentioning the AMERICAN DENTAL JOURNAL when writing to Advertisers you will confer a favor upon both the Advertiser and the Journal.



PYORRHEA CAN BE CURED WITH THE ASSISTANCE OF RIGGSCIDE

RIGGSCIDE is composed of a liquid and powder. The liquid is used preceding instrumentation. It is pumped into pus pockets on a broach wrapped with cotton. Scaling and polishing may then be done with little hemorrhage and practically no pain. The liquid acts as a gentle anesthetic to the soft tissues and obtunds the cementum. It stimulates the formation of healthy granulations and tones up the entire tissue.

The powder is given the patient for home use. In from seven to ten office treatments, at intervals of three days, the gums and teeth of even desperate cases show a greatly improved condition.

TRIAL OFFER

Write us on your professional letterhead and we will send you a full-sized package containing liquid and powder. Use it according to directions. When you are satisfied with the results, send us \$1.00. If not satisfied, return the unused portion.

The Dr. J. C. GRAFT TERRAPLASTICA MFG. CO.
5 West Park Street : : : NEWARK, N. J.

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HYALLOY

Hyalloy is manufactured after Dr. G. V. Black's method, which is the only one that has ever approached a perfect alloy.

Hyalloy has proven its absolute superiority over all of the old method alloys.

Hyalloy has been subjected to the most careful and rigid tests known, by the authorities on Alloy, both in and out of the mouth.

Hyalloy is made from chemically pure materials which when amalgamated will be found to possess a very smooth feeling, free from granulations.

Hyalloy is made in three grades—slow, medium and quick setting, in shavings or filings.

Price "direct to you" per ounce.... \$ 1.43

Price "direct to you" for 5 ounces.. 6.44

Price "direct to you" for 10 ounces. 11.60

The Ross Dental Manufacturing Co.

177 N. STATE STREET
CHICAGO, U. S. A.

College Outfits

Your son or friend can save from

25 to 50%

in purchasing their needs while attending Dental College. Send in your required list of instruments, etc., and get our prices.

"WE SELL DIRECT TO YOU"

WANTED—Students at all schools to represent us. Write for particulars.

THE ROSS DENTAL MANUFACTURING COMPANY

177 N. State Street

Chicago, Illinois, U. S. A.

Have Your Old Burs Recut 28 Cents Per Dozen

On account of the great number of burs which we receive daily, and due to a new process which we have adopted, we are enabled to make this very low price.

**Sharp Instruments Help Towards
PAINLESS DENTISTRY**

and are a continual source of satisfaction and time saver to operator.

Try Us Once

**In your remittance
allow for return postage.**

**THE ROSS DENTAL MFG CO.
177 N. State St., CHICAGO**



Send for comic cards, colors, size 7x9

"Don't Scare"

OR HURT YOUR PATIENT, BUT USE

ODONTOLINE

With this anesthetic you can grind down sensitive teeth for shell crowns, prepare cavities for fillings or inlays, remove live pulps or extract any number of teeth without one bit of pain.

Simply inject into the periodontal membrane at the neck of the tooth, wait about two minutes and proceed with the work.

ODONTOLINE does not reach the circulation, it is localized, consequently you get the maximum amount of anesthesia from a very small amount of anesthetic used.

Dentists that have once used ODONTOLINE refuse to quit.

ONE OUNCE, 50c

FIVE OUNCES, \$2.00

25c FOR SAMPLE

Louisville Dental Laby. & Mfg. Co.

BOX 686

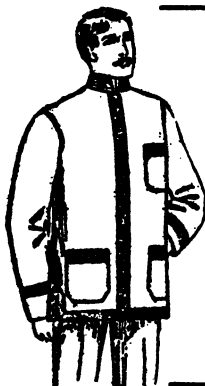
LOUISVILLE, KENTUCKY

WANTED: Every dentist who has anything to sell or exchange, be it instruments, material, furniture or industrial stock, to send us a list of same, stating the very lowest price acceptable, either cash or exchange merchandise.

We have numerous inquiries for **BARGAINS** and can dispose of any such to your advantage.

Address all communications to EXCHANGE DEPARTMENT

AMERICAN DENTAL JOURNAL, 177 N. State Street, Chicago, Ill.



"Every Coat We Turn Out A Winner"

Dentists' Office Coats for professional work, made of White or fifty other shades of washable materials, fast colors, and thoroughly shrunk before made up. All coats made-to-measure and in any style desired. We pay express or postage to any part of the world. Write for samples, styles and prices, free upon request.

WEISSFELD BROS.

Manufacturers of Coats and Uniforms. "The kind they all admire"

117 NASSAU ST. NEW YORK CITY

We have no branches and are not connected with any other firm. Dentists giving orders to agents should specify Weissfeld Bros. of New York City.

WHEN TO USE ANTIKAMNIA & CODEINE TABLETS

DURING AND FOLLOWING OPERATING-

To ease nagging and shooting pains; To quiet nerve tension and hysteria; To prevent headaches and nausea, Two Tablets before operating; One Tablet an hour when indicated

FOR EXTRACTING

One Antikamnia & Codeine Tablet before extracting and another following will quiet pain and allay irritability

PULPITIS AND SENSITIVE DENTINE

Give One or Two Tablets internally and pack cavity with powdered Tablet. In pericementitis apply powdered Tablet to margin of gum

IN TOOTHACHE, EARACHE AND NEURALGIA

Administer one Antikamnia & Codeine Tablet every two hours

For Samples and Literature address

THE ANTIKAMNIA CHEMICAL CO.

ST. LOUIS, MO., U.S.A.



ZHONGIVA

SUGGESTED AND USED BY DR. D. D. SMITH IN ALVEOLAR PYORRHEA AND OTHER MOUTH DISORDERS.

Twenty Years' Professional Endorsement and Use

Dentists are earnestly urged to study the prompt and positive remedial action of Zhongiva upon the mucous membrane of the mouth, in Alveolar Pyorrhea, any condition of gum recession, loosening of the teeth, distress from wearing plates, painful erupting wisdom teeth, or any inflamed condition of the mouth.

Zhongiva is Antiseptic, Antiphlogistic and Germicidal

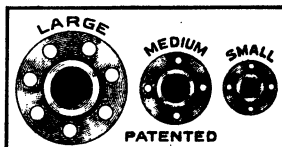
At all Druggists and Dental Supply Houses. **SAMPLES SENT ON REQUEST BY**

James J. Ottinger, Mfr. Spruce and 20th Streets
PHILADELPHIA, PA.

THE "EUREKA" ATTACHMENT

The satisfaction they are giving is rapidly extending their use.

"BEST BECAUSE THEY GIVE THE BEST RESULTS"



Its superiority of attachment has been amply demonstrated for the past seven years.

Compare simplicity of removing "EUREKA" cup with others.

Upper or Lower \$2.00 per Box of Six

EUREKA SUCTION CO., Loudonville, Ohio

Notice! to Dentists who do their cast work with Vacuum, Steam or Pressure Machine

Bohr's New Aluminum Combination Metal for Plates is the only one that will make satisfactory Dentures

No shrinkage, expansion, or pit holes. It makes a clean, sharp, true cast, reproducing all lines perfectly. Is light, strong, and durable, also impervious to the disintegrating tendencies of oral secretions so destructive to unalloyed aluminum.

Bohr's Combination Aluminum (2 ingots enough for 3 plates), per ingot..	\$0.50
Bohr's Aluminum Casting Investment, 3-pound can25
Bohr's Inlay Metal	2.50
Bohr's Inlay Investment, 3 pounds25
Bohr's New Flask for casting plates, with full directions	1.00

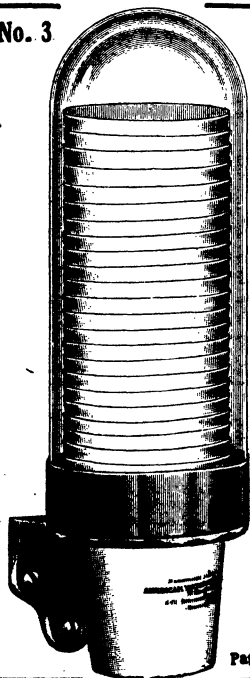
Used by most good laboratories. For sale at all dental depots, or direct.

TRY US ON YOUR NEXT DIFFICULT CAST ALUMINUM CASE.

Send for price list.

JOHN BOHR, D. D. S., Cast Metal Specialist
Masonic Temple, Chicago, Illinois

No. 3



Patents Pending

IMPROVED ASEPTIC

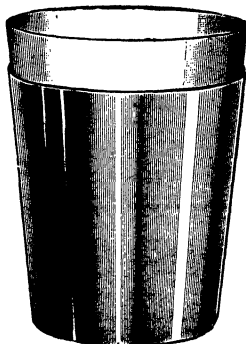
Paper Cups for the Dental Profession

The Automatic Dental Cup Brackets are very neat, attractive and convenient.

The Improved Cups have reinforced bottoms, making them absolutely waterproof.

Up-to-date Dentists use them and up-to-date patients appreciate them as they prove a safeguard against infection, and guessing whether glass is sterilized is eliminated.

All Dental Supply Houses carry them.



Patents Pending

Manufactured by

American Water Supply Co. of N. E.

251 CAUSEWAY ST., BOSTON

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Brewster's Gold

Formulae of E. R. S. Brewster
and known by the following



Used by an ever increasing number of discriminating dentists.

Dentists who appreciate *quality* and have not had personal experience with our Gold are referred by permission to leading Dentists in Chicago.

Out of town Dentists are requested to mail their orders to

Our New City Office
22 East Randolph St.

Most prompt and careful attention is given to Mail Orders.

Gold Scraps and Sweeps receive special attention and are bought for cash. The liberality of our dealings in this branch has made for us many permanent customers.

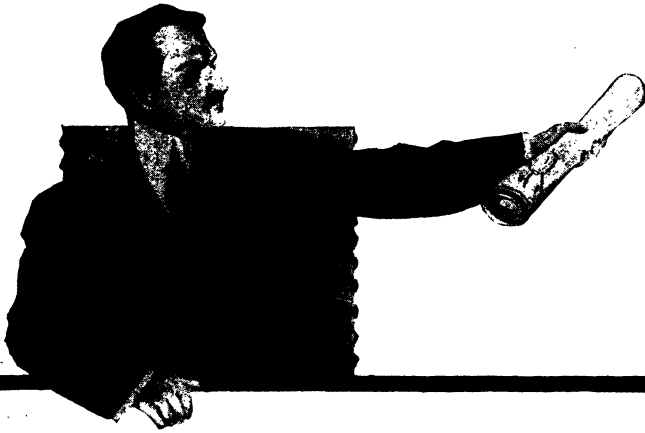
E. R. S. BREWSTER

Gold and Silver Refiner

22-26 East Randolph Street, Chicago, Ill.

**CAUTION!—BREWSTER'S GOLD IS SUPPLIED ONLY IN ENVELOPES
BEARING ABOVE TRADE MARK AND EACH PENNYWEIGHT
OF GOLD IS SO STAMPED.**

Guaranteed as Represented



We are not limited in our methods and our ideas have been gained from a decade of constant service to the best practitioners in the United States and Canada.

Naturally we have gained a supply of information in handling all manner of cases—from the most ordinary to the most intricate and unusual—information that gives us a broad knowledge of the Oral Cavity and enables us to offer suggestions and render a dependable service that no amount of money would buy elsewhere.

Yet, we make no extra charges for our work on account of the exclusive and special service rendered. Hardly a day passes that we do not receive a letter from some Dentist expressing appreciation of our help in handling particular cases.

You'll find our experience and painstaking care of value in *your practice*. We can be of much assistance in relieving you of a lot of worry and anxiety in solving the numerous problems that confront the most skilled practitioners from time to time.

We will take pleasure in forwarding you Special Information Blanks which we have prepared for the sole purpose and use of the profession and you may feel free to call upon us whether you are now among our list of clients or not.

We will gladly offer advice and suggestions regarding the handling or construction of any mechanical devices or cases requiring same, provided you send models from which we can formulate conclusions.

Mailing boxes will be sent upon request.

Drs. Christopher & Golbeck

Monarch Dental Laboratory Co.

177 North State Street

-

-

Chicago, U. S. A.

By mentioning the AMERICAN DENTAL JOURNAL when writing to Advertisers you will confer a favor upon both the Advertiser and the Journal.



We are justly proud of our reputation for the conception and construction of Prosthetic Specialties. Such work is intricate even when handled by the most skilled specialists, and you are interested in entrusting such work to people whom you can depend upon to handle it in an intelligent manner.

There is a lot more to satisfactory Dental Laboratory Work besides good materials and following instructions carefully. Good judgment that is based upon many years of practical experience is of undoubted value to you.

The more able the people who do such work, the fewer dissatisfied patients you'll have and the quicker your practice will develop.

We want you to know that we are at your service.

Our price list and reference book will prove a helpful guide to you in sending your laboratory work out. It contains many pointers that will preclude the likelihood of errors.

This book will be sent free and postpaid upon request, together with any special information about service on any work out of the beaten path.

Send for the Price List and Reference Book, Mailing Boxes, Information Blanks, etc.

Your request will have our prompt and careful attention.

Our policy is to use the very best of all materials and we will not attempt to compete with people who resort to inferior materials and slipshod methods.

Drs. Christopher & Golbeck

Monarch Dental Laboratory Company

177 North State Street

-

-

Chicago, U. S. A.

By mentioning the AMERICAN DENTAL JOURNAL when writing to Advertisers you will confer a favor upon both the Advertiser and the Journal.

INDISPENSABLE WHEN ONCE USED BURNETT'S TRUE-BITE TRAYS



OPEN

A Boon
to Plate Makers

No Resetting
or Grinding
of Teeth

A TRUE BITE is Absolutely Essential to the Construction of a Satisfactory Denture. THE TRUE-BITE TRAY Enables You to Obtain THE CORRECT BITE IN ALL CASES.

Obtain the
correct maxillary
antagonism
and perfect
articulation
is assured



Diagram Showing the Protrusive Bite, Before and After the Lever on Tray is Operated. Note Position of Condyle in Both Figures.

Press the Lever on tray while the jaws are closing.

Study the Diagram and Principle on which the TRUE-BITE TRAY works and decide for yourself. ALL DENTISTS who are using these Trays are Enthusiastic in Their Praise.

A Few Reasons Why You Should Use Burnett's True-Bite Tray:

- Because: It simplifies your work. It is Easy to Operate.
- Because: It makes Hard or Difficult Cases Easy.
- Because: There is No Guess Work. It is Reliable.
- Because: The teeth Always Occlude in the mouth as you have arranged them on the articulator.
- Because: It Obviates Grinding the teeth with stones after the plates are finished.
- Because: It Adds a Perfection to the making of Plates that has never to any degree of certainty been obtained in any other way.
- Because: It does away with the Old Hit or Miss Method of getting a True-Bite.
- Because: It is a Practical Dental Help.
- Because: It is a Practice Builder.
- Because: It Saves You Time, Money and Worry.
- Because: It discounts All Other Methods in securing a True-Bite.
- And Because: You can be ASSURED after using the TRUE-BITE TRAY you would not part with it for Many Times Its Cost.

BURNETT'S TRUE-BITE TRAY is made in Two Sizes, No. 1 and No. 2, and are Sold in Sets, or Singly. No. 1 will serve in taking a True-Bite in most cases; No. 2 is for Extreme Cases, or where the Jaws are Large. (We advise getting both sizes.) When desired the Trays can be separated for Sterilization by removing the Draw Pin.

The Trays, with FULL INSTRUCTIONS How to Use, Sent on Receipt of Price, \$8.00 for the Set, \$4.50 for Single Tray. ORDER DIRECT, or through your DEALER. Post FREE on Receipt of Price.

A FAIR OFFER—Your money back in 30 days if you wish to return the Trays

I. A. BURNETT

Suite 902-3, 8 N. State St. (N. W. Cor. State & Madison Sts.), CHICAGO, ILL.

Phenakit

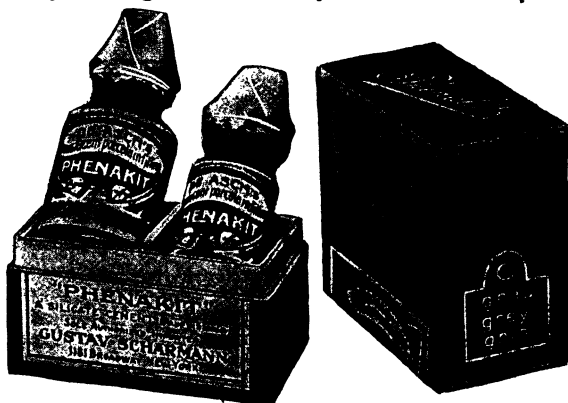
A SILICATE CEMENT

That Does NOT Injure the Pulp

- ¶ It is the liquid of the ordinary Silicate Cements that injures and devitalizes pulps.
- ¶ **Phenakit** liquid is so **bland** that it will not affect the most sensitive pulp, even in deep cavities.
- ¶ Only a small amount of the syrupy liquid is used—the powder being worked into it until a dry, crumbly mass is produced.
- ¶ **Phenakit** being **adhesive**, packs readily into cavities and takes a beautiful polish.
- ¶ Instructions for mixing and manipulating must be followed absolutely if success is to be attained.
- ¶ The liquid is very thick and requires a large amount of powder to satisfy it in order to have a perfect chemical union.

Mixing: Use very *little* liquid—add powder gradually. Mix under heavy pressure with a narrow agate spatula. Add more powder, and spatulate until it becomes a **crumbling mass**. The surface of the mixed mass on the slab must not appear shiny or glossy, it must look dry.

Packing: Pack small pieces at a time into cavity with smooth, clean metal instruments—using heavy pressure. Press surface firmly. A minute amount of white vaseline may be used if instruments stick. Allow filling twenty minutes or more for first chemical reaction—then give first polish—after which coat thickly with Phenakit Varnish. If final polish is given after twenty-four hours it will be more permanent



COLORS: There are six primary colors from which all other shades may be blended:

C (Gray)	D (Light Pearl Gray)	K (Yellowish White)
L (Light Yellow)	N (Yellow)	Q (Brownish Gray)

Prices { **PHENAKIT, small package, one color \$ 2.50**
PHENAKIT, large package, one color 4.00
PHENAKIT, one package, all six colors 13.50
 ONE BOTTLE PHENAKIT VARNISH GRATI WITH EACH PACKAGE
 WE DO NOT FURNISH SAMPLES

FOR FULL PARTICULARS AND LITERATURE SEND TO

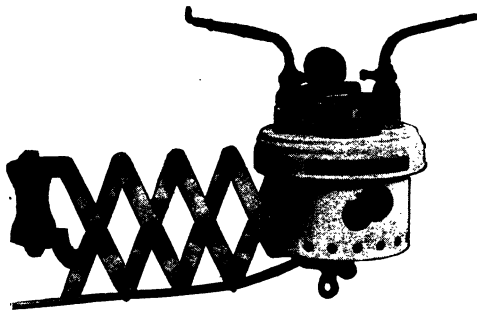
SOLE AUTHORIZED IMPORTER

GUSTAV SCHARMANN, 1183 Broadway, New York City

PHENAKIT is Manufactured by Gebr. DDr. Asch Chemical Laboratory, Berlin, Germany

To be had of THE ROSS DENTAL MFG. CO., as well as other dental dealers, or direct from the importer.

By mentioning the AMERICAN DENTAL JOURNAL when writing to Advertisers you will confer a favor upon both the Advertiser and the Journal.



QUESTION.

How can I combine in one neat and convenient apparatus a thoroughly efficient sterilizer, a spray heater, warm water for my mouth syringe, a gold annealer, a gutta percha heater and warm air for chip blower?

ANSWER.

Buy a Dr. STAMPER'S COMBINED STERILIZER, WATER AND SPRAY HEATER.

Made in white porcelain enamel and nickel-plate; and for use of either gas, alcohol or electricity.

For Sale by All Dealers

Paducah Sterilizer M'f'g Company
(Incorporated)

Paducah, Kentucky

Look At It This Way

*The Profession
Is Advancing—
Are You?*

Combine your professional with your mechanical knowledge and use a metallic lining on your vulcanite dentures; avoid heated and spongy gums and general unsanitary conditions of the oral tissues by using

**The
Roscinian Linings**

**The Roscinian 24 K all gold Lining,
\$3.50 per pkg.**

(Sufficient for 1 upper denture)

**The Roscinian Felt Aluminum Lining,
\$2.00 per box**

(Sufficient for 4 upper dentures)

Directions are simple. No accessory tools to buy. No chance results; we do the experimenting.

For sale at your dealer, or address direct.
Any special lining made to order if practical.
All correspondence answered.

THE ROSCINIAN CO.

METALLURGISTS

and Manufacturers Metallic Linings
7703 Woodland Ave. S. E., Cleveland,

COLONIAL ALLOY

\$1.50 Per Oz.

WHY PAY MORE?

A comparison of Colonial's formula, with that of any other Alloy formula in the world, will show that from a monetary standpoint it is only exceeded in value by those Alloys in which Gold or Platinum is incorporated. It is noted for its edge strength and color. Sets very hard and retains a high polish. Send for sample and quantity price.

WE ALSO MAKE

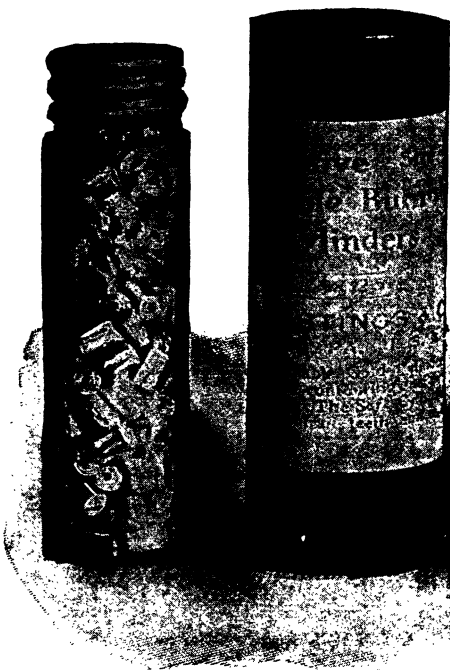
**TRADE REYNOLDS MARK
CELEBRATED**

GOLD SPECIALTIES

S. H. REYNOLDS SONS CO.

**601 to 604 Colonial Building
BOSTON, MASS.**

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Morgan, Hastings & Co.
817-21 FILBERT STREET
PHILADELPHIA,
PA.

OUR SPECIALTY

**Extra Pliable
BURNISH**

**Gold
Cylinders**

THESE Cylinders are known the world over and now have a wider reputation than our Gold Foil Ropes and Regular Cylinders which are the standard of quality everywhere. Order direct if not obtainable from your dealer.

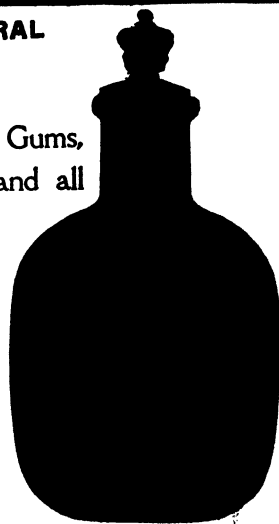
GLYCO-THYMOLINE

IS INDICATED WHEREVER THE ORAL
SECRETIONS ARE FOUND
TO BE ACID.

In Pyorrhea, Alveolar Abscess, Spongy Gums, Chronic Ulceration, Abscessed Antrum, and all Abnormal conditions of the mouth the **Alkaline Antiseptic** treatment cannot be too strongly advocated.

SPECIAL OFFER.—This Sprinkle Top Bracket Bottle, together with samples for your patients, will be sent free to any dentist mentioning this journal.

Kress & Owen Company,
210 FULTON STREET. NEW YORK CITY.



THE ALKALINE ANTISEPTIC

Northwestern University Dental School

The Course for Practitioners and Graduates

This course opens June 15, 1911, and continues during four weeks, with six days of teaching and work. Each day will include two hours of lectures by the Professors and six hours of practical work by the Post-Graduates under the instruction and guidance of the Professors and Demonstrators of the School.

The studies for 1911 are:

Operative Dentistry—Prof. **G. V. BLACK**, assisted by Prof. A. D. Black and others.

Histology, as applied to Operative Dentistry—Professor NOYES.

Oral Surgery—Professor GILMER and assistants.

Dental Pathology and Therapeutics—Professor G. V. BLACK.

Prosthetic Dentistry—Professor PROTHERO and assistants.

Orthodontia—Professor SELLERY.

Especial attention is given to PORCELAIN INLAYS, CAST and other GOLD INLAYS, crowns, bridge work of all kinds, the treatment of so-called PYORRHEA, and the most recent methods in Operative Dentistry, Oral Surgery, and Orthodontia.

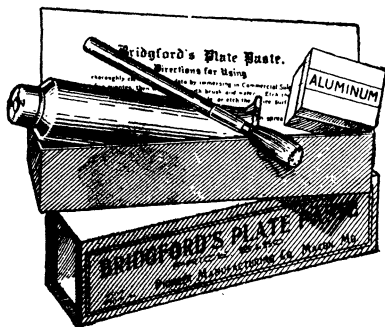
Certificates are given to those who complete the course.

FEES.

Registration	\$ 5.00
Tuition for one subject	45.00
Tuition for two or three subjects	60.00
Tuition for entire course	70.00

To graduates of Northwestern a reduction of twenty per cent will be made on tuition fee

For further information, address Dr. C. R. E. KOCH, Secretary, Northwestern University Building, 87 Lake Street, Chicago. CABLE ADDRESS: N. U. D., CHICAGO.



Bridgford's Plate Paste

MAKES MISFIT PLATES FIT

HOW?

BY applying the paste on back of plate and pressing to place you will have as sharp an impression as any taken with the usual impression materials. When vulcanized and finished, it has a beautiful Aluminum Surface!

Flask with one pour—that's all, then you'll hear no more—"Doctor, my plate drops down when I talk or eat.

Enough for 6 to 10
Plates

Price, \$1.50 per tube

Full Directions With
Each Package

For sale by dealers or direct

The Pioneer Manufacturing Company

MACON, MISSOURI, U. S. A.

When ordering direct,
send money order or draft

ELLIOTT & COMPANY, Edinburgh, Scotland
Sole Agent England, Ireland and Scotland

By mentioning the AMERICAN DENTAL JOURNAL when writing to Advertisers you will confer a favor upon both the Advertiser and the Journal.

Quality, Price and Service

Our Gold Plate and Gold Solders are the favorites with Crown and Bridge Workers everywhere.

Their use increases the sum total of mechanical efficiency and makes every hour of the day more valuable to every busy dentist.

PRICE LIST

Gold Foil, 1/4 oz.....	\$ 3.25	22K Gold Plate, per dwt.....	\$1.06
Gold Foil, 1/2 oz.....	12.50	24K Gold Plate, per dwt.....	1.10
Gold Foil, per oz.....	25.00	Crown Metal, per dwt.....	1.40
Gold Cylinders, 1/4 oz.....	3.50	Clasp Metal, per dwt.....	1.00
Gold Cylinders, 1/2 oz.....	13.25	Clasp wire, per dwt.....	1.05
Gold Cylinders, per oz.....	26.50	18K Gold Wire, per dwt.....	.92
14K Solder, per dwt.....	.65	20K Gold Wire, per dwt.....	1.02
16K Solder, per dwt.....	.75	Platinum Sheet.....	Market Price
18K Solder, per dwt.....	.85	Platinum Foil, for inlay work.....	Market Price
20K Solder, per dwt.....	.95	Platinum Iridio Wire.....	Market Price
22K Solder, per dwt.....	1.00	Pure Silver.....	Market Price
Coin Solder.....	.95	Pure Zinc, per oz.....	.10
Silver Solder, per oz.....	.90	Pure Tin, per oz.....	.97
18K Gold Plate, per dwt.....	.85	Pure Copper, per oz.....	.05
20K Gold Plate, per dwt.....	.95	White Diamond Alloy, per oz....	1.50
22K Gold Plate, per dwt.....	1.05		
Coin Gold Plate, per dwt.....	1.02		

Unequalled mail order service. Large stock to select from. All orders filled as soon as they reach us—and back to you as fast as the mail or express can carry them. There is no delay at our end of the line.

WE PAY THE FOLLOWING CASH PRICES FOR SCRAP GOLD, PLATINUM, ETC.

	Per Dwt.		Per Dwt.
Gold Fillings.....	\$1.00	Gold Fillings.....	60 to 75
Gold Scrap.....	72 to .88	Scrap Platinum.....	Market Price

BENCH AND FLOOR SWEEPINGS REFINED

Thomas J. Dee & Co.

Gold, Silver and Platinum Refiners

Main Office and Salesroom:
26 W. Washington Street
(67 and 69, old number)

Smelting Works:
317 East Ontario Street

CHICAGO

By mentioning the AMERICAN DENTAL JOURNAL when writing to Advertisers you will confer a favor upon both the Advertiser and the Journal.

Orthodontia Appliances and Supplies



Orthodontia Appliances,
in Nickel-Silver.

Non-Corrosive Metal.

"The Blue Island Brand"
and Precious Metal.

Dr. Barnes' patented Ap-
pliances.

Dr. Pullen's Appliances
in Precious Metal only.

We make it a specialty to fit Appliances
to model.

BLUE ISLAND SPECIALTY CO., BLUE ISLAND, ILLINOIS, U. S. A.

Re-Newed Dental Furniture at Bargain Prices

We have chairs of all makes and styles, re-upholstered, re-nickeled, made as good as new in every way, at a fraction of the original Trust-cost.

**ELECTRIC ENGINES, LATHES, MOTORS, SWITCH-BOARDS,
AND GOLD ANNEALERS**

**FOOT ENGINES, HAND-PIECES, BRACKETS, CABINETS,
VULCANIZERS, GASOMETERS, FOLDING CHAIRS
FOUNTAIN SPITTOONS**

We Buy, Sell and Exchange. Write for Prices.

Hall Dental Supply Company
183 North Wabash Ave., Chicago

By mentioning the AMERICAN DENTAL JOURNAL when writing to Advertisers you will confer a favor upon both the Advertiser and the Journal.

We GUARANTEE this Sanitary Article for FIVE Years

OL-SE-CO

Automatic Liquid Soap Jar

**NOW USED BY OVER 12,000
OF THE DENTAL PROFESSION**



One of the foremost
Dentists of Philadel-
phia writes us:

"The Automatic Liquid Soap Jar and OL-SE-CO, which I purchased some time ago, has proven to be one of the most satisfactory investments I have ever made. The Jar is a very practical ornament and OL-SE-CO is the best soap I have ever used. In fact, the dispenser occasions much commendation as it is in plain sight of every patient who comes into my operating room."

(The Doctor knows how
to advertise in an ethical
way.—Ed)



No. 1. Price \$2.00
Press the Button and it flows into your hand

No. 4
Price Complete, \$4.00

No. 4 is a combination Fixture made of brass, heavily nicked or oxidized with drinking glass, screws, etc., ready to be placed in position. The pictures show the device; it is serviceable and always just where you can find it.

OL-SE-CO

is recognized by the Dental Supply Houses throughout the United States, Canada and Cuba as the "Standard" Liquid Soap upon the market. Olive oil with c. p. glycerine and no alcohol makes a fine soap for the hands, face and bath. This sanitary method with a high grade soap is more economical than cake soap. Why not buy a dispenser and a quart of OL-SE-CO for \$2.75? Order from



The Automatic Jar and the Modern
Way to Use Soap.

THE ROSS DENTAL MFG. CO.
177 N. STATE ST. CHICAGO,

or direct from the

SAPONOL CHEMICAL COMPANY,
1938 Park Ave., N. Y. City.

Catalogue and Literature Sent on Request.

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Gold Solders

**Ask the Dentist or Mechanic
Who are Using Our
Solders**

**The Best and Cleanest Flowing to be
Had**

PRICES RIGHT

SPECIAL QUANTITY RATES

No. 22 Solder	No. 16 Solder
No. 20 Solder	No. 14 Solder
No. 18 Solder	Coin Solder
	Silver Solder

ALL TO BE HAD IN WIRE FORM ALSO

Inlay Gold

24 kt. in 2 dwt. Buttons
24 kt. with 5% Platinum

Filling Gold

Foil No. 4, 5, 6, 30 and 60
Cylinders $\frac{1}{4}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$
and asst. in $\frac{3}{32}$, $\frac{1}{16}$, $\frac{1}{10}$, $\frac{1}{8}$ oz. vials

SPECIAL RATES IN OZ. LOTS

Gold Plates

24 kt.
22 " Soft, Medium and Hard
20 " Plate or Wire
18 " Plate or Wire

Clasp Plate or Wire

22 kt. Special for Backing
18 " Special for Backing

Coin Gold Plate

22 kt. Shells or Disks

Platinum

Foil Extra Soft $\frac{1}{1000}$, $\frac{2}{1000}$
Wire 3% to 30% Iridium

Scraps and Filings

**Bought for Cash or
in Exchange**

Sweeps Refined

JULIUS ADERER

Manufacturer

101 West 42d Street, :: :: :: New York

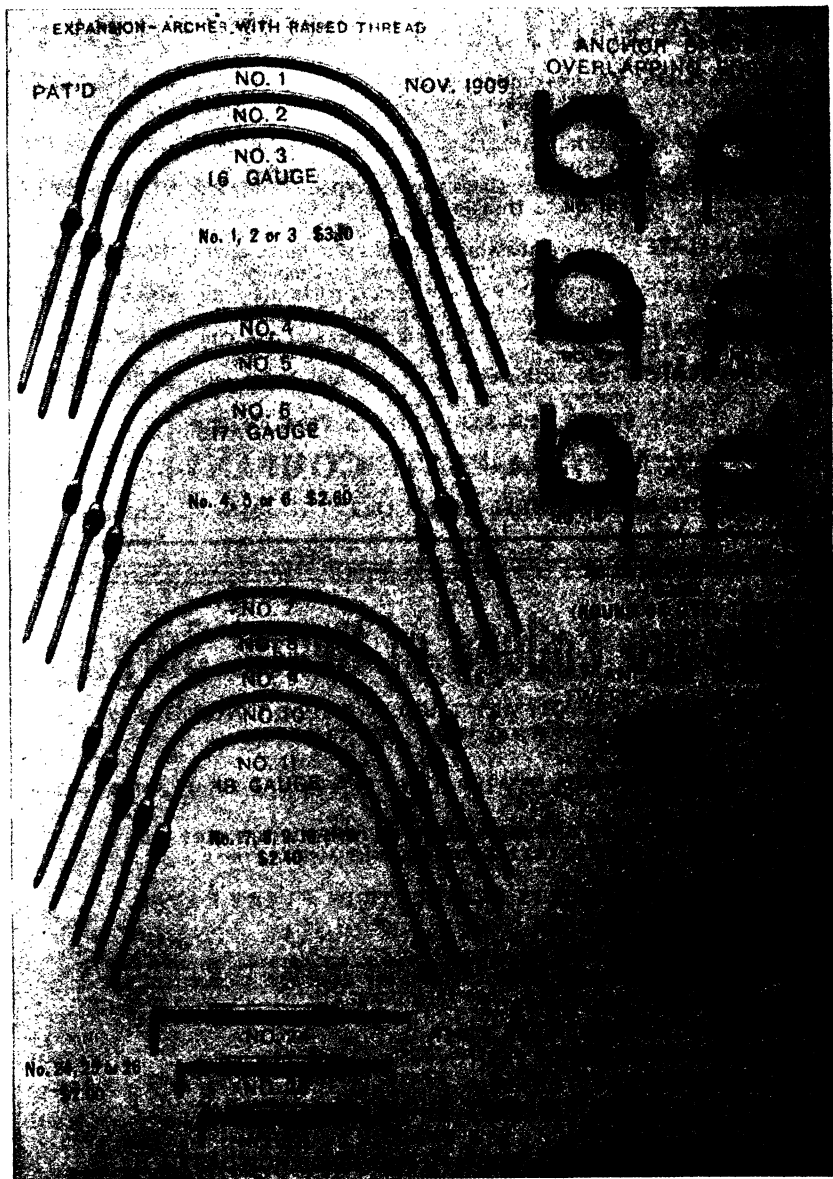
Branches: BROOKLYN, N. Y., SEATTLE, WASH.

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ORTHODONTIA APPLIANCES

IN

PLATINUM-GOLD



Write for
Illustrated Catalogue
showing latest improvements

JULIUS ADERER, Mfr.
101 W. 42d St., NEW YORK

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MEND-A-PLATE

MAKES DRUDGERY

PLEASANT AND PROFITABLE

- | | | |
|---------------------|--|---------------------|
| MEND-A-PLATE | Reduces time of repairing and refitting broken plates to less than half consumed by old methods. | MEND-A-PLATE |
| MEND-A-PLATE | Several plates may be mended at same time in same flask. | MEND-A-PLATE |
| MEND-A-PLATE | Six or eight plates may be repaired with less labor and trouble than one in the ordinary way. | MEND-A-PLATE |
| MEND-A-PLATE | Makes plate work easy and profitable. Saves labor, worry, time, patience and money. | MEND-A-PLATE |
| MEND-A-PLATE | Is spread on edges of broken parts; they are pressed together and vulcanized; that's all. | MEND-A-PLATE |
| MEND-A-PLATE | Is also used for refitting plates and replacing teeth on plate. Easily and quickly done. | MEND-A-PLATE |
| MEND-A-PLATE | Costs little; does much; should be in laboratory of every dentist. | MEND-A-PLATE |

PRICE PER JAR, RED OR PINK, \$2.00

Manufactured & Guaranteed by **MEND-A-PLATE COMPANY** BUNCETON, MO., U. S. A.

Sold by **THE ROSS DENTAL MFG. CO. 177 N. State St., Chicago, Ill.**

Chicago College of Dental Surgery

DENTAL DEPARTMENT VALPARAISO UNIVERSITY.

FOUNDED IN 1880 2420 GRADUATES

HAS CONTINUED UNDER THE MANAGEMENT OF ITS FOUNDERS SINCE ITS ORGANIZATION

**THE THIRTIETH ANNUAL COURSE OF INSTRUCTION WILL BEGIN
OCT 7, 1911, ENDING ABOUT JUNE 1, 1912**

INSTRUCTION IS COMPLETE IN EVERY DETAIL

**THE CLINICAL MATERIAL IS ABUNDANT, WHILE THE COLLEGE BUILDING AND ITS
EQUIPMENT OFFER UNSURPASSED FACILITIES TO THE
DENTAL STUDENT**

FOR CATALOGUE ADDRESS

DR. TRUMAN W. BROPHY,
DEAN

1745 W. HARRISON ST.

CHICAGO, ILL.

By mentioning the AMERICAN DENTAL JOURNAL when writing to Advertisers you will confer a favor upon both the Advertiser and the Journal.

If a man who has used a remedy for Pyorrhea doesn't know what it'll do, who does?

Dr. Veo's Remedy

Is Endorsed by Users Everywhere

September 10, 1906.

DR. E. H. SMITH, Columbia, Mo.

Have been using VEO'S REMEDY for a number of years, and don't see how I can get along without it.

OHIO.

December 4, 1906.

DR. CHARLES W. REELHORN, Pataskala, Ohio

After using VEO'S REMEDY for a couple of months can say that I could not get along without it. I use it principally as a "HEMOSTATIC AND OBTUNDENT." When properly used as such it has no equal.

NEBRASKA.

August 23, 1906.

DR. T. H. SPINDLO, Crawford, Neb.

Allow me to thank you for VEO'S REMEDY, and the help it has been to me in my practice.

IDAHO.

November 15, 1904.

DR. J. A. GRANT, Wallace, Idaho.

I am never without DR. VEO'S REMEDY, as it is a practice builder, and I certainly intend to continue the use of same.

TEXAS.

DR. OLHO G. GILDER, Gatesville, Tex.

I find DR. VEO'S REMEDY a sure cure in abscesses and the best Pyorrhea Remedy I have ever used.

OKLAHOMA.

March 5, 1908.

DR. H. H. SEWELL, Purcell, Okla.

I have been using VEO'S REMEDY for Pyorrhea. I find merits in same.

TENNESSEE.

September, 22, 1904.

DR. D. R. STUBBLEFIELD, Nashville, Tenn.

I use DR. VEO'S REMEDY with a great deal of satisfaction, and shall hereafter keep it constantly on hand.

GEORGIA.

November 26, 1910.

DR. W. H. STEWART, Sylvester, Ga.

"VEO'S REMEDY" is a remedy in time of need. To check hemorrhage after pulp extirpation I find it unequaled. I also use it for other hemorrhages such as bleeding gums when setting crowns.

November 21, 1910.

DR. CHARLES F. CROUCH, Dawson, Ga.

I have used VEO'S REMEDY constantly for five or six years. I think it is the best "Stuff" I can get, hence I continue to use it with happy results.

FLORIDA.

November 18, 1910.

DR. R. P. TAYLOR, Jacksonville, Fla.

I have used several bottles of VEO'S REMEDY and am well pleased with the results.

Prepared only by CHARLES H. VEO, D. M. D., 74 Boylston St., Boston, Mass., U. S. A

Orders filled with a guarantee of satisfaction or money cheerfully refunded

For
Sale by **THE ROSS DENTAL MFG. CO.**
177 N. State Street - - - CHICAGO

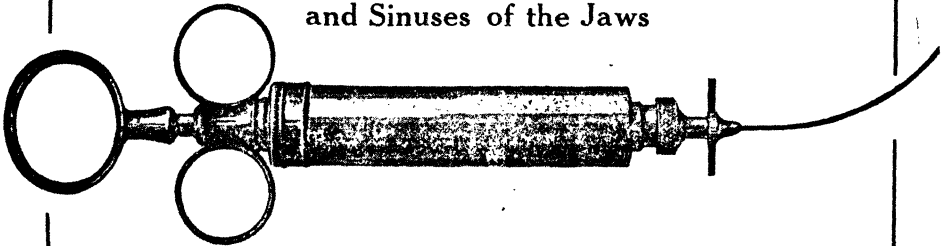
Bismuth Paste Outfit

(Original)

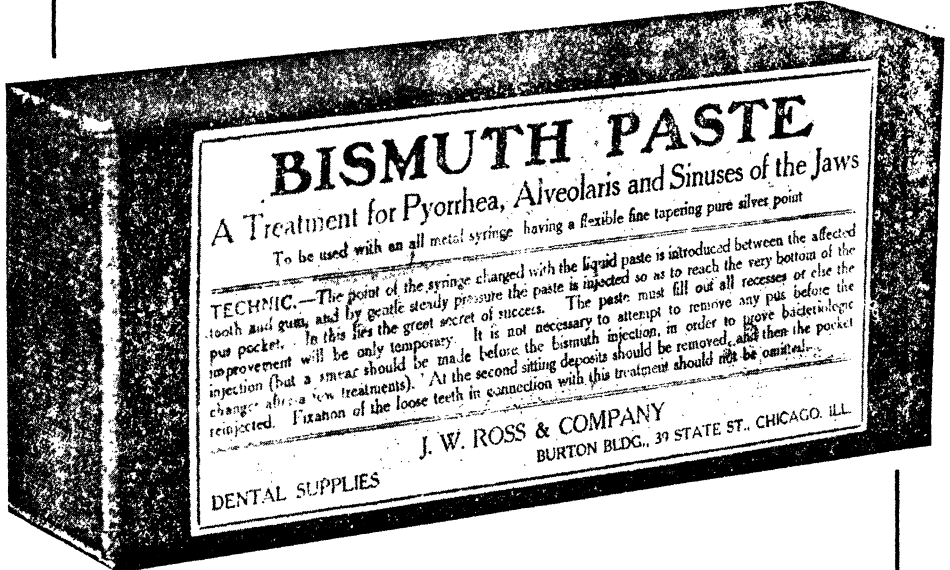
AS SUGGESTED BY

RUDOLPH BECK, D. D. S., Chicago, Illinois

For successful treatment of Chronic Pyorrhea Alveolaris
and Sinuses of the Jaws



A SPECIAL ALL METAL SYRINGE, with the fine, flexible, tapering silver point, is especially adapted for injecting the Bismuth Paste. It has been endorsed by all who have adopted the method of treatment, as it gives the necessary pressure to force the paste into every part of the infected area. **THE EASE WITH WHICH IT CAN BE FILLED** with Bismuth Paste readily suggests itself to the operator as being the only practical syringe for this purpose.



Outfit complete with one silver point and paste.....	\$3.00
Syringe and Silver Needle.....	2.00
Flexible Silver Points only, Large, Medium, Small.....	1.00
Bismuth Paste, "Dr. Beck's No. 2," per tube.....	75

Postage for outfit 15c extra. When you purchase this outfit you get the original article. Send your remittance with order. Put up and sold only by

THE ROSS DENTAL MANUFACTURING COMPANY

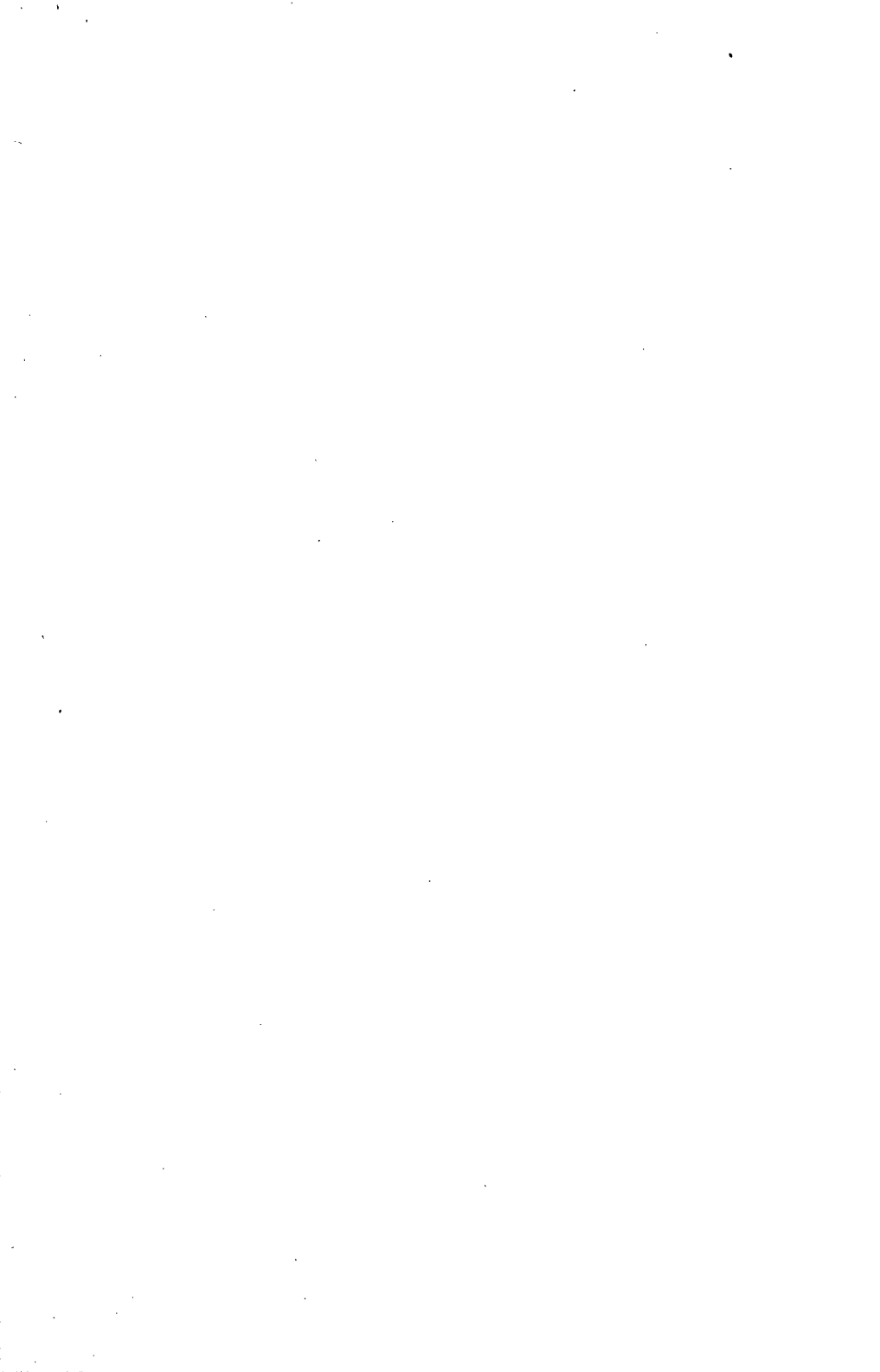
BURTON BUILDING. 177 N. State St., Cor. Lake, CHICAGO, ILL.

UNIVERSITY OF MICHIGAN



3 9015 05803 2767





BOUND

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